MZ-E510

SERVICE MANUAL

Ver 1.0 2003. 02

AEP Model
E Model



Photo: Silver

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Model Name Using Similar Mechanism	MZ-E710
Mechanism Type	MT-MZE710-183
Optical Pick-up Name	ABX-1E

SPECIFICATIONS

Audio playing system
MiniDisc digital audio system
Laser diode properties
Material: GaAlAs
Wavelength: λ = 790 nm
Emission duration: continuous
Laser output: less than 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.
Revolutions
Approx. 300 rpm to 2,700 rpm
Error correction
ACIRC (Advanced Cross Interleave Reed Solomon Code)
Sampling frequency
44.1 kHz
Coding
ATRAC (Adaptive TRansform Acoustic Coding)
ATRAC3: LP2 / LP4
Modulation system
EFM (Eight to Fourteen Modulation)
Number of channels
2 stereo channels
1 monaural channel
Frequency response
20 to 20,000 Hz ± 3 dB
Outputs
Headphones / earphones: stereo mini-jack, output level
5 mW + 5 mW load impedance 16 Ω
Power requirements
Nickel metal hydride rechargeable battery
One NH-10WM (supplied): 1.2 V, 900 mAh (MIN)
One LR6 (size AA) battery (not supplied)
External power jack (for the battery charging stand): Power rating 3V DC

Battery operation time
Battery life[1]
(Unit: Approx. hours) (JEITA[2])

Batteries	SP Stereo (normal)	LP2 Stereo	LP4 Stereo
Ni-MH rechargeable battery NH-10WM[3]	26	32	42
LR6 (SG) Sony Alkaline dry battery[4]	57	72	91
LR6 (SG)[4] and NH-10WM[3]	85	107	130

1) Measured with the power save function on (see "Preserving battery power").
2) Measured in accordance with the JEITA (Japan Electronics and Information Technology Industries Association) standard (using a Sony MDW-series Mini-disc).
3) With a fully charged battery
4) When using a Sony LR6 (SG) "STAMINA" alkaline dry battery (produced in Japan).

Note
The battery life may be shorter than that specified, depending on the temperature of the location, the operating conditions, and the type of battery being used.

Dimensions
Approx. 73.4 × 80.6 × 15.3 mm (w / h / d) (3 × 3 1/4 × 5/8 in.)
(not including projecting parts and controls)
Mass
Approx. 67 g (2.4 oz) (the player only)
Supplied accessories
Headphones / earphones with a remote control (1)
Battery charging stand (1)
AC power adaptor (for the supplied battery charging stand) (1)
Rechargeable battery (1)
Rechargeable battery carrying case (1)
Dry battery case (1)
Carrying pouch (1)

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Design and specifications are subject to change without notice.

PORTABLE MINIDISC PLAYER

9-877-043-01 **Sony Corporation**
2003B167800-1 **Personal Audio Company**

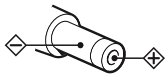
Published by Sony Engineering Corporation

SONY®

On power sources

- Use house current, LR6 (size AA) battery, or car battery.
- For use in your house: Use the AC power adaptor supplied with this recorder. Do not use any other AC power adaptor since it may cause the recorder to malfunction.

Polarity of the plug

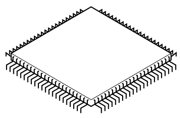


- Connect the AC power adaptor to an easily accessible AC outlet. Should you notice an abnormality in the AC power adaptor, disconnect it from the AC outlet immidiatedly.
- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use this recorder for a long time, be sure to disconnect the power supply (AC power adaptor, dry battery, or car battery cord). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.

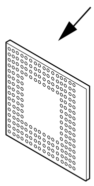
* Replacement of IC501, IC601 used in this set requires a special tool.

- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different from that of conventional IC.

- Lead layouts



Lead layout of conventional IC



CSP (chip size package)

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

LF : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

SECTION 1
SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

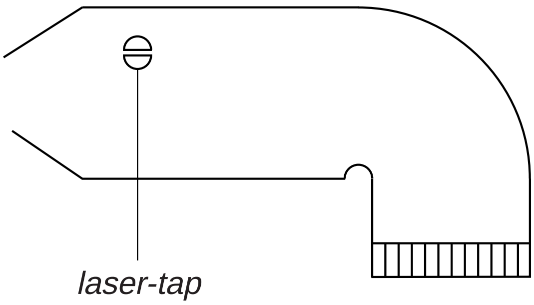
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (ABX-1E)

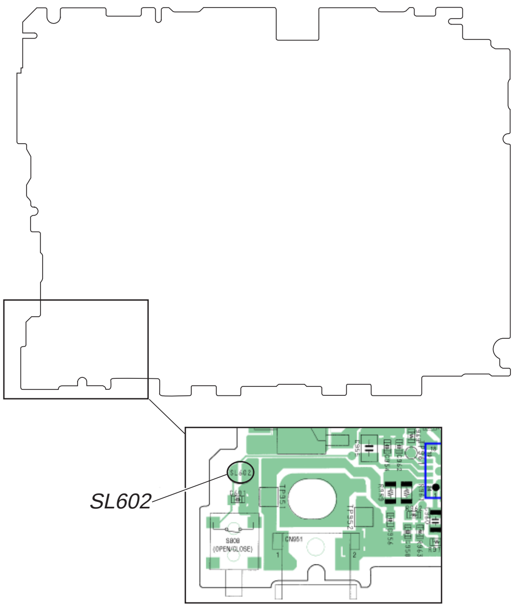
The laser diode in the optical pick-up block may suffer electrostatic break-down easily. When handling it, perform soldering bridge to the laser-tap on the flexible board. Also perform measures against electrostatic break-down sufficiently before the operation. The flexible board is easily damaged and should be handled with care.



OPTICAL PICK-UP FLEXIBLE BOARD

- In performing the repair the power supplied to the set, removing the MAIN board causes the set to be disabled.
  In such a case, perform soldering bridge to SL602 on the MAIN board.

【MAIN BOARD】(SIDE A)

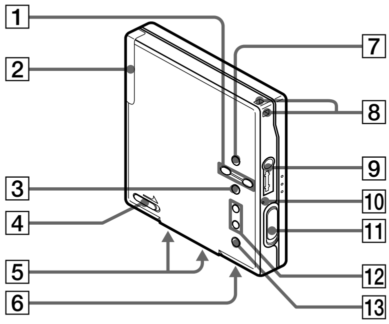


SECTION 2
GENERAL

This section is extracted from instruction manual.

Parts and controls

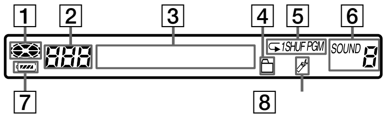
The Player



1 VOLUME +*, – buttons
2 Battery compartment
3 ▶II* button
4 HOLD (Locking the control) switch
5 Terminals for dry battery case (at the bottom)
6 Terminals for charging stand (at the bottom)
7 GROUP button
8 Hand strap hole
Use the hole to attach your strap.
9 ∩ (headphones / earphones) jack
10 "3-color info-LED"
11 OPEN switch
12 I◀◀, ▶▶I button
13 ■ button

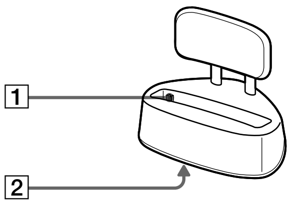
* VOLUME + and ▶II have a tactile dot.

The display window of the remote control



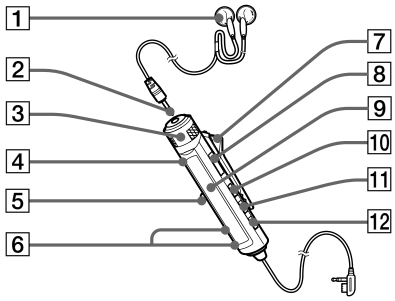
1 Disc indication
2 Track number display
3 Character information display
4 Group play indication
5 Play mode indication
6 6-band equalizer indications
7 Battery level indication
8 Bookmark indication

The battery charging stand



1 Terminals for charging
2 DC IN 3V jack (at the bottom)

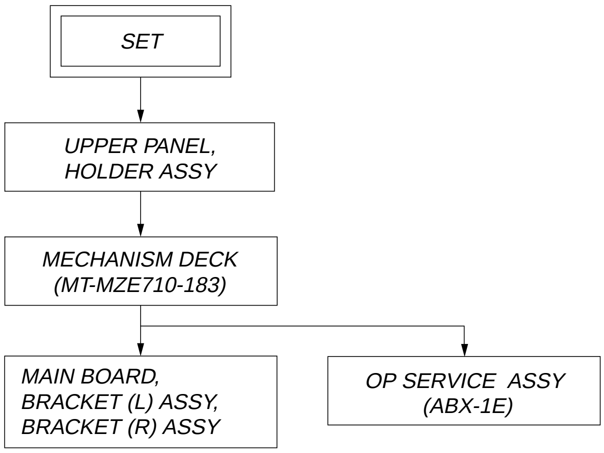
The headphones/earphones with a remote control



1 Headphones / earphones
2 Stereo mini plug
3 Control VOL +, –
Turn to adjust the volume.
4 ■ (stop) button
5 Jog lever (I◀◀ • ▶II / ENT • ▶▶I) button
6 □ (Group) +, – button
7 Clip
8 HOLD switch
9 Display window
10 DISPLAY button
11 P MODE / ↻ (play mode / repeat) button
12 SOUND button

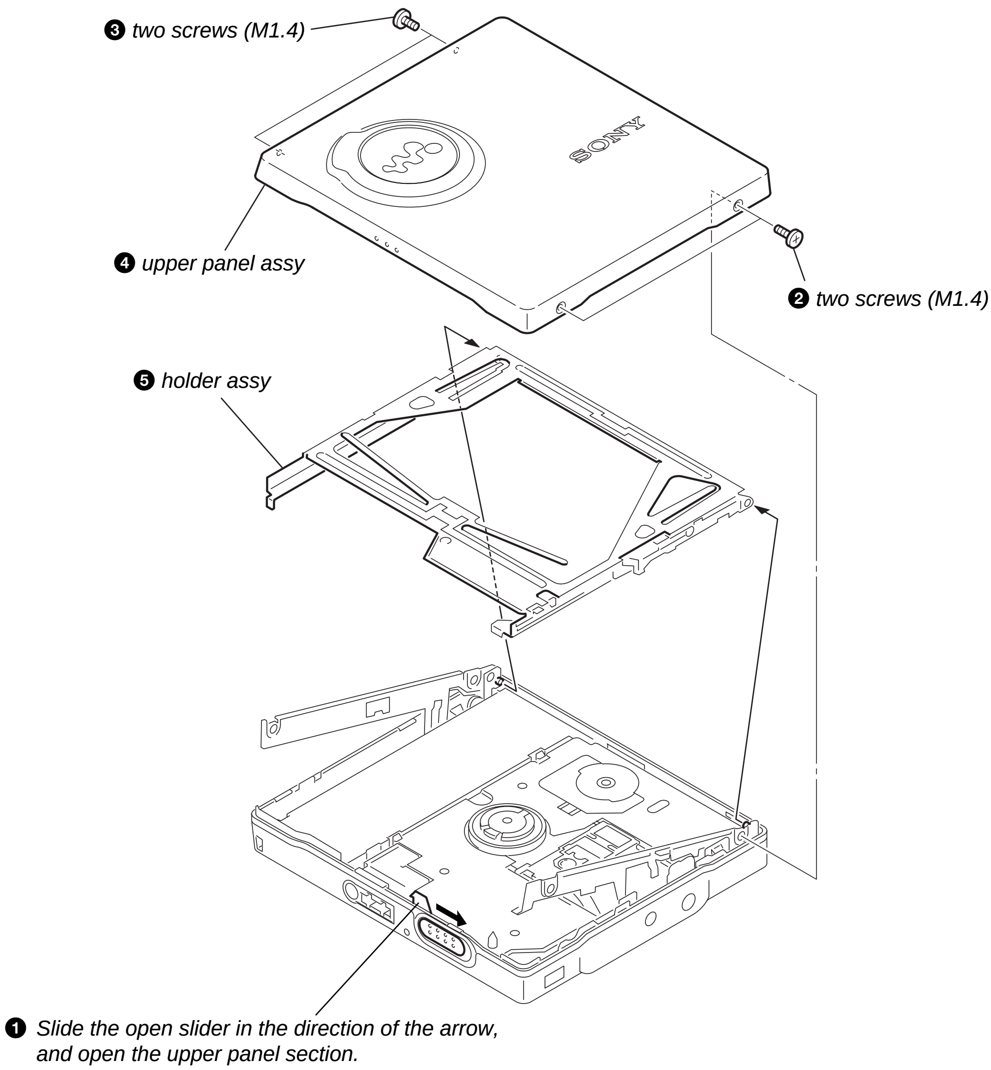
SECTION 3
DISASSEMBLY

Note : This set can be disassemble according to the following sequence.

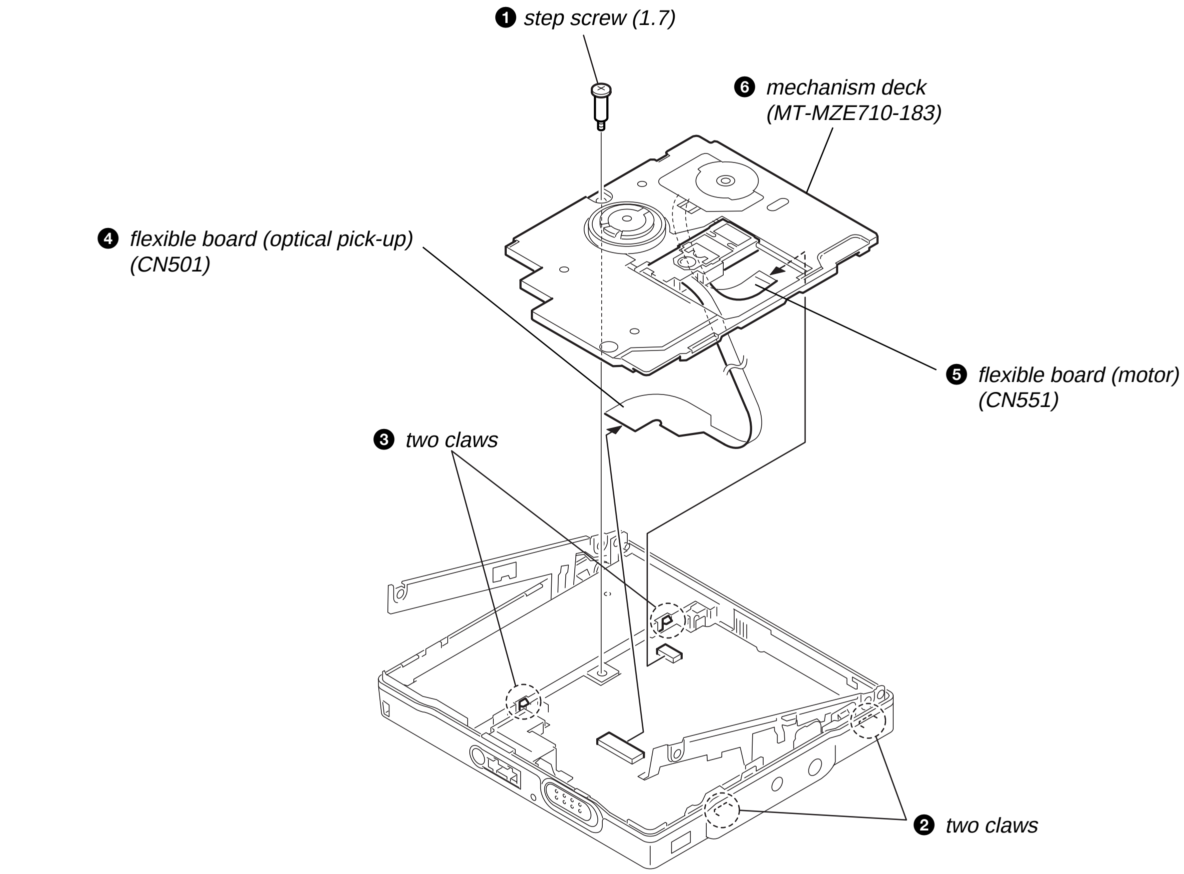


Note : Follow the disassembly procedure in the numerical order given.

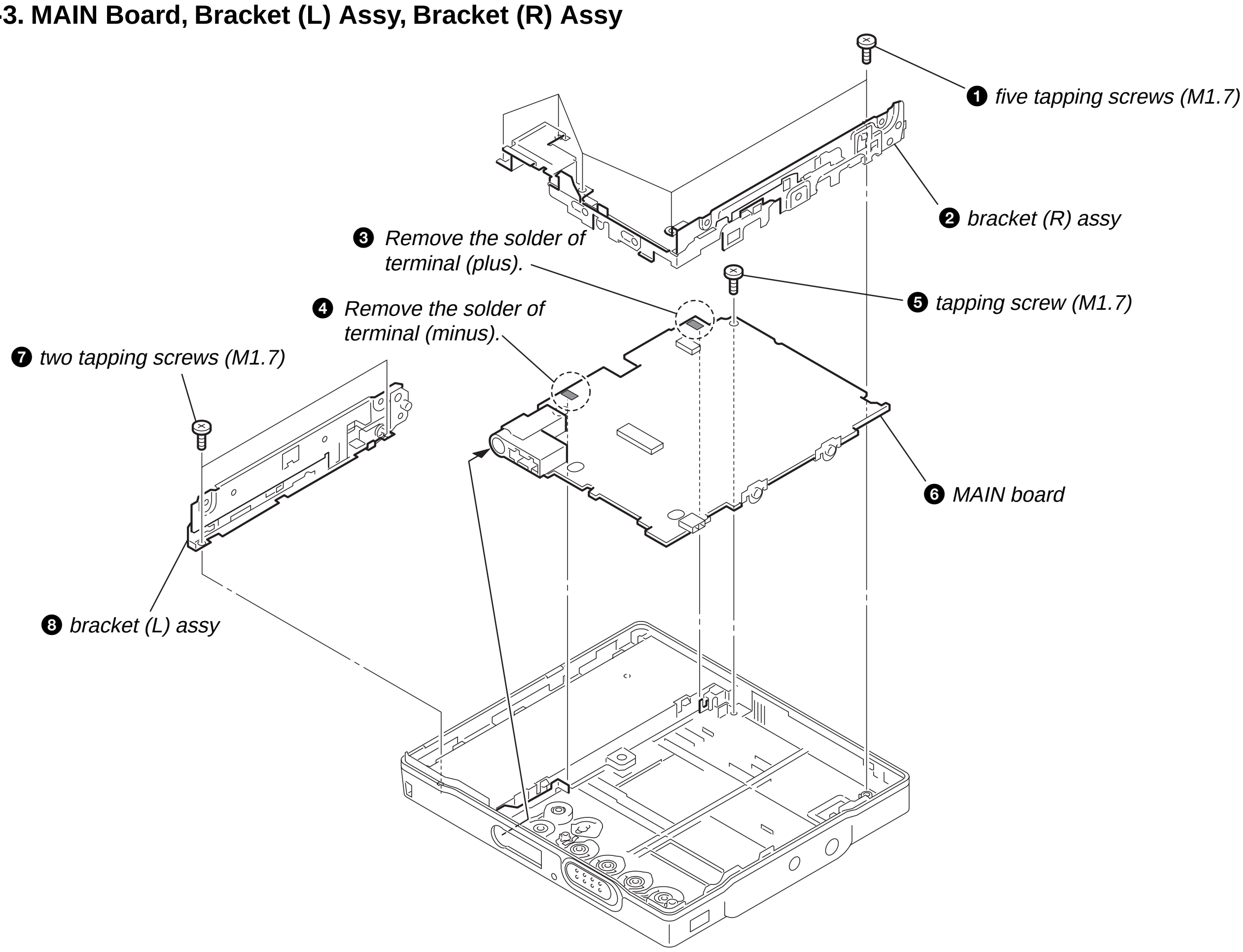
3-1. Upper Panel, Holder Assy



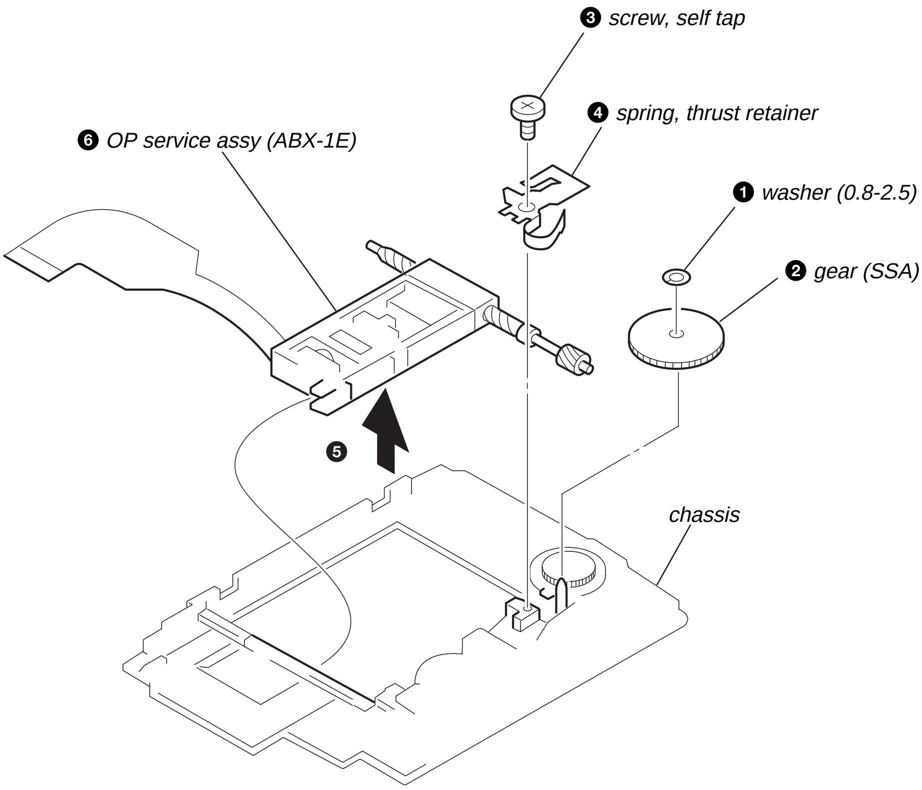
3-2. Mechanism Deck (MT-MZE710-183)



3-3. MAIN Board, Bracket (L) Assy, Bracket (R) Assy



3-4. OP Service Assy (ABX-1E)



SECTION 4
TEST MODE

Outline

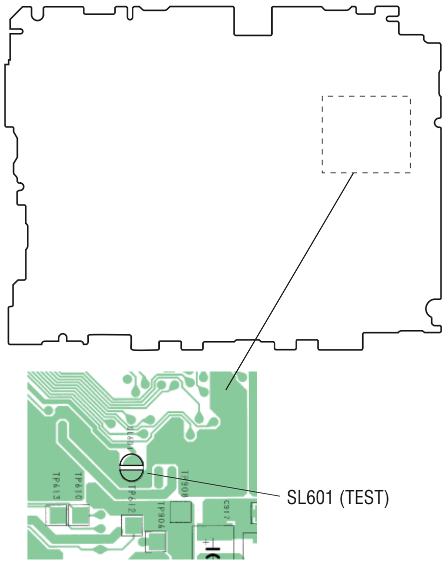
- This set provides the Overall adjustment mode that allows CD and MO discs to be automatically adjusted when in the test mode. In this overall adjustment mode, the disc is discriminate between CD and MO, and each adjustment is automatically executed in order. If a fault is found, the system displays its location. Also, the manual mode allows each individual adjustment to be automatically adjusted.
- Operation in the test mode is performed with the set. A key having no particular description in the text, indicates a set key.

Setting Method of Test Mode

There are two different methods to set the test mode:

① Short SL601 (TEST) on the MAIN board with a solder bridge and turn on the power.

-MAIN Board (Side A)-



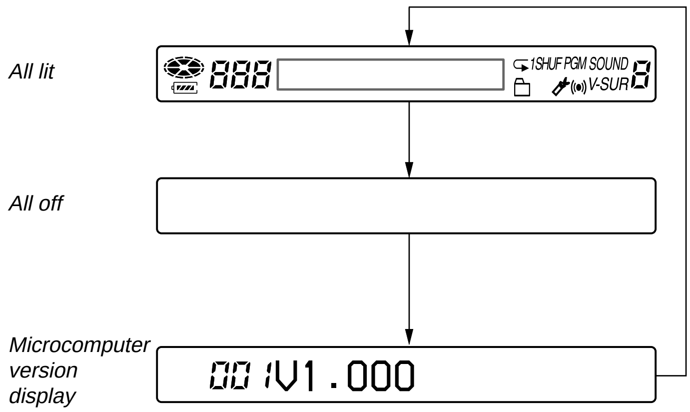
② In case of setting the test mode by keys on the set and remote commander:
In the normal mode, turn on the [HOLD] switch on the set.
While pressing the [■] key on the set, press the keys on the remote commander with the following order:
[▶▶I] → [▶▶I] → [I◀◀] → [I◀◀] → [▶▶I] →
[I◀◀] → [▶▶I] → [I◀◀] → [🗀–] → [🗀–]

Note: If electrical adjustment (CD and MO overall adjustment) has not been finished completely, "ERROR" is displayed on LCDs of the set and the remote commander.

Operation in Setting the Test Mode

- When the test mode becomes active, first the display check mode is selected.
- Other mode can be selected from the display check mode.
- When the test mode is set, the LCD repeats the following display.

Remote commander LCD display



- 3-color info LED blinks in orange.
- When the [▶II] key or the [🗀–] key on the remote commander is pressed and hold down, the display at that time is held so that display can be checked.

Releasing the Test Mode

For test mode set with the method ①:
Turn off the power and open the solder bridge on SL601 (TEST) on the MAIN board.

Note: Remove the solders completely. Remaining could be shorted with the chassis, etc.

For test mode set with the method ②:
Turn off the power.

Configuration of Test Mode

[Test Mode (Display Check Mode)]

- Press the [▶▶I] key, or press the [VOL +] key on the remote commander → [Manual Mode]
  - Press the [■] key (return)
  - → [Servo Adjustment]
  - → [Audio Adjustment]
  - → [Power Supply Adjustment]
  - → [OP Alignment Adjustment]
- Press the [I◀◀] or [VOL –] key → [Overall Adjustment Mode]
  - Press the [■] key (return)
  - → [Electrical Offset Adjustment]
  - → [Power Supply Adjustment Auto Item Feed]
  - → [CD Overall Adjustment/ MO Overall Adjustment]
- Press the [GROUP] key , or press the [DISPLAY] key on the remote commander → [Self-Diagnosis Result Display Mode]
  - Press the [■] key (return)
- Press the [VOL +] key, or press the [▶▶I] key on the remote commander → [Sound Skip Check Result Display Mode]
  - Press the [■] key (return)
- Press the [VOL -] key, or press the [DISPLAY] key on the remote commander for several seconds (about 3 seconds) → [Key Check Mode]
  - The key check quits, or open the upper panel

Manual Mode

Mode to adjust or check the operation of the set by function.
Normally, the adjustment in this mode is not executed.
However, the Manual mode is used to clear the memory, power supply adjustment, and laser power check before performing automatic adjustments in the Overall Adjustment mode.

The manual mode consists of a major item, a medium item and a minor item.
The manual mode is divided into four groups of major items.
SERVO : item number 000 - 500, 800 -
AUDIO : item number 600 -
POWER : item number 700 -
OP : item number 900 -
A medium item divides a major item and is used to select functions.
In a minor item, adjustments or operation checks are performed.

- **Transition method in manual mode**

1. Set the test mode (see page 9).
2. Press the [▶▶I] key or [VOL+] key on the remote commander activates the manual mode where the LCD display as shown below.

Remote commander LCD display

`000 Manual`

3. During each test, the optical pick-up moves outward or inward while the [▶▶I] or [I◀◀] key is pressed for several seconds respectively.
4. Each test item is assigned with a 3-digit item number; 100th place is a major item, 10th place is a medium item, and unit place is a minor item.
   The values adjusted in the test mode are written to the non-volatile memory (for the items where adjustment was made).

[Major item switching]
- [VOL +] key: 100th place of item number increase.
- [VOL –] key: 100th place of item number decrease.

[▶▶I] key (down) / [■] key (up)

[Medium item switching]
- [VOL +] key: 10th place of item number increase.
- [VOL –] key: 10th place of item number decrease.

[▶▶I] key (down) / [■] key (up)

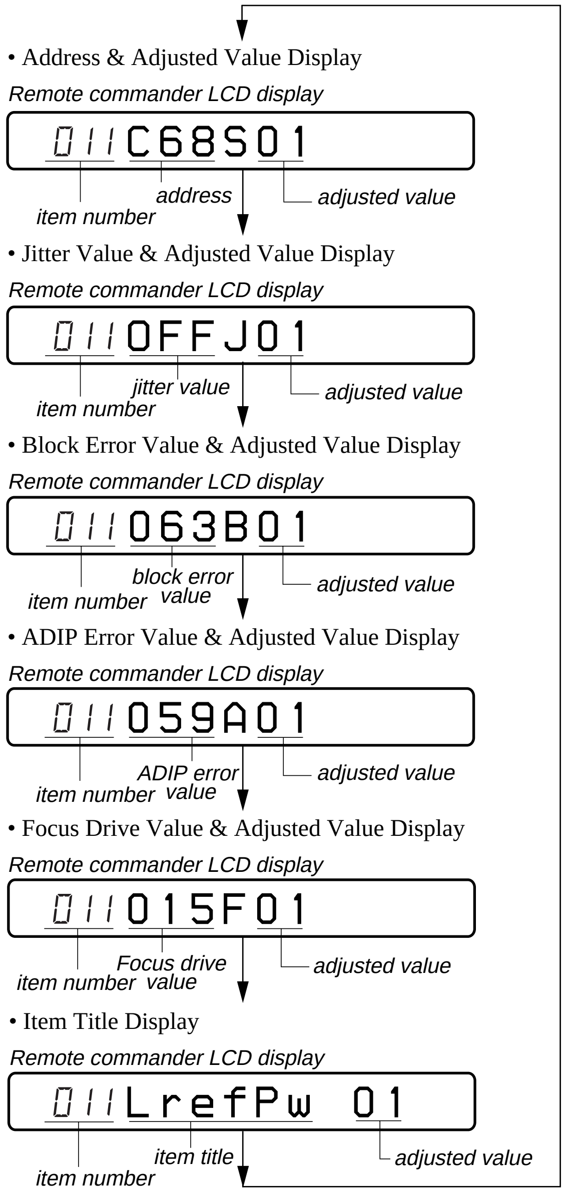
[Minor item switching]
- [▶▶I] key: Unit place of item number increase.
- [I◀◀] key: Unit place of item number decrease.

→ [Adjusted value variation]
- [VOL +] key: Increases the adjusted value of the 1st digit
- [VOL –] key: Decreases the adjusted value of the 1st digit
- [P MODE] key of the remote commander: Increase the adjusted value of the 2nd digit
- [SOUND] key of the remote commander: Decrease the adjusted value of the 2nd digit

→ [Adjusted value write]
- [▶II] key or [🗀 –] key of the remote commander:
  When adjusted value is changed: Adjusted value is written.
  When adjusted value is not changed: That item is adjusted automatically.

→ [RAM monitor]
- [GROUP] key or [DISPLAY] key of the remote commander for several seconds

5. The display changes a shown below each time the DISPLAY key on the remote commander is pressed.



However in the power mode (item number 700's), only the item is displayed.

6. Quit the manual mode, and press the ■ key to return to the test mode (display check mode).

Overall Adjustment Mode

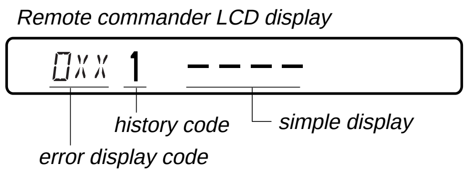
Mode to adjust the servo automatically in all items.
Normally, automatic adjustment is executed in this mode at the repair.
For further information, refer to "SECTION 5 ELECTRICAL ADJUSTMENTS" (see page 14).

Self-Diagnosis Result Display Mode

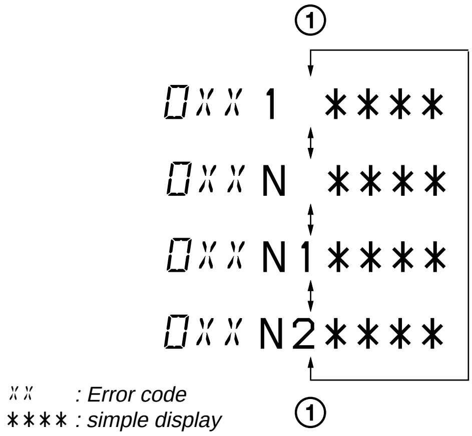
This set uses the self-diagnostic function system in which if an error occurred during the playing, the mechanism control block and the power supply control block in the microcomputer detect it and record its cause as history in the nonvolatile memory.
By checking this history in the test mode, you can analyze a fault and determine its location.

- **Self-diagnosis result display mode setting method**

1. Set the test mode (see page 9).
2. In the display check mode, pressing the GROUP key or pressing the DISPLAY key on the remote commander activates the self-diagnosis result display mode where the LCD display as shown below.



3. Then, each time the ▶▶I key is pressed, LCD display descends by one as shown below. Also, the LCD display ascends by one when the I◀◀ key is pressed.



4. Quit the self-diagnosis result display mode, and press the ■ key to return to the test mode (display check mode).

• Description of error indication codes

Problem	Indication code	Meaning of code	Simple display	Description
No error	00	No error	----	No error
Servo system error	01	Illegal access target address was specified	Adrs	Attempt to access an abnormal address
	02	High temperature	Temp	High temperature detected
	03	Focus error	Fcus	Disordered focus or can not read an address
	04	Spindle error	Spdl	Abnormal rotation of disc
TOC error	11	TOC error	TOC	Faulty TOC contents
	12	Data reading error	Data	Data could not be read at SYNC
	13	TOC address error	Tadr	TOC address data error
Power supply system error	22	Low battery	LBat	Momentary interruption detected
Offset system error	31	Offset error	Ofst	Offset error
	32	Focus error ABCD offset error	ABCD	Focus error ABCD offset error
	33	Tracking error Offset error	TE	Tracking error Offset error
	34	X1 tracking error Offset error	X1TE	X1 tracking error Offset error
	35	MD DATA 2 Disc error	MD2	MD DATA 2 disc error
	36	Mirror error	Mirr	Mirror decision retry over

• Description of indication history

History code number	Description
1	The first error
N	The last error
N1	One error before the last.
N2	Two errors before the last.

Reset the Error Display Code

After servicing, reset the error display code.

• Setting method of reset the error display code

1. Set the test mode (see page 9).
2. Pressing the [GROUP] key or pressing the [DISPLAY] key on the remote commander activates the self-diagnosis result display mode.
3. To reset the error display code, press the [►II] key or [folder −] key on the remote commander (twice) when the code is displayed.

Remote commander LCD display
(Key pressing at the first time)

000 ClrOK?

Remote commander LCD display
(Key pressing at the second time)

000 ErrCLR

(All the data on the 1, N, N1, and N2 will be reset)

Sound Skip Check Result Display Mode

This set can display the count of errors that occurred during the playing for checking.

• Setting method of sound skip check result display mode

1. Set the test mode (see page 9).
2. Press the [VOL+] key or press the [▶▶I] key on the remote commander, and then the playing sound skip check result display mode becomes active where the LCD displays the following.

Remote commander LCD display

000 P**

Total count of play system errors (hex.)

3. Each time the [▶▶I] key is pressed, the display item moves down by one as shown below. Also, if the [I◀◀] key is pressed, the display item moves up by one.

Playing sound skip result display

```
000 P**R**
   ↕
000 EIB  **
   ↕
000 Stat**
   ↕
000 Adrs**
   ↕
000 BEmp**
   ↕
000 ######
```

P** : *Total play errors (hex.)*
** : *Counter of sound skip check each item (hex.)*
######: *6-digit address where sound was skipped last (hex.)*

• Cause of sound skip error

	Cause of error	Description of error
Play	EIB	Sound error correction error
	Stat	Decoder status error
	Adrs	Address access error
	BEmp	Buffer is empty

4. To quit the sound skip check result display mode and to return to the test mode (display check mode), press the [■] key.

Key Check Mode

This set can check if the set and remote commander function normally.

• Setting method of key check mode

1. Set the test mode (see page 9).
2. Pressing the [VOL-] key or [DISPLAY] key on the remote commander for several seconds (about 3 seconds) activates the key check mode. (At the last two digits, AD value of remote commander key line is displayed in hexadecimal)
3-color info-LED light in red.

Remote commander LCD display

000   **

**: *AD value of the remote commander key (hexadecimal 00 to FF)*

3. When each key on the set and on remote commander is pressed, its name is displayed on the remote commander LCD.

Example1: When the [▶▶I] key on the set is pressed:

Remote commander LCD display

000 FF   **

**: *AD value of the remote commander key (hexadecimal 00 to FF)*

Example2: When the [▶▶I] key on the remote commander is pressed:

Remote commander LCD display

000 rFF   **

**: *AD value of the remote commander key (hexadecimal 00 to FF)*

4. When all the keys on the set or on the remote commander are considered as OK, the following displays are shown for and 3-color info-LED light in green.

Example1: When the keys on the set are considered as OK:

Remote commander LCD display

888 SET OK **

**: *AD value of the remote commander key (hexadecimal 00 to FF)*

Example2: When the keys on the remote commander are considered as OK:

Remote commander LCD display

888 RMC OK **

**: *AD value of the remote commander key (hexadecimal 00 to FF)*

5. When all keys were checked or if the upper panel is opened, the key check mode quits and the test mode (display check mode) comes back and 3-color info-LED returns to blinking in orange.

SECTION 5
ELECTRICAL ADJUSTMENTS

Outline

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode.
  However, before starting automatic adjustment, the memory clear, power supply adjustment, and laser power check must be performed in the manual mode.
- A key having no particular description in the text, indicates a set key.

Precautions for Adjustment

1. Adjustment must be done in the test mode only.
   After adjusting, release the test mode.
2. Use the following tools and measuring instruments.
   - Test CD disc TDYS-1 (Part No. : 4-963-646-01)
   - SONY MO disc available on the market
   - Digital voltmeter
   - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
   - AC adaptor (3V) and cradle
   - Regulated dc power supply
   - Thermometer (using the Temperature Correction)
3. Unless specified otherwise, use regulated dc power supply (3V).
4. Switch position
   HOLD switch .... ON

Adjustment Sequence

1. NV Reset (item number: 021) (EEPROM clear)
   ↓
2. Temperature Correction (item number: 015)
   ↓
3. Power Supply Manual Adjustment
   ↓
4. Laser Power Check and Adjustment

   } Manual Mode (steps 1–4)

   ↓
5. CD Overall Adjustment (item number: 031)
   ↓
6. MO Overall Adjustment (item number: 032)

   } Overall Mode (steps 5–6)

   ↓
7. RESUME Clear (item number 043)
   ↓
8. Rewriting the Patch Data (at replacement of the MAIN board)
   ↓
9. Rewriting the NV values

   } Manual Mode (steps 7–9)

Note: "2. Temperature Correction" and "3. Power Supply Manual Adjustment" can be performed continuously with pressing the [VOL –] key or the [P MODE] key on the remote commander in the overall adjustment mode.

NV Reset

Caution: The shipment data will be cleared without the adjusted values of the electrical offset adjustment and power supply adjustment when the NV is reset.

• Setting method of NV reset

1. Select the manual mode of the test mode, and set item number 021 NV Reset (see page 10).

   Remote commander LCD display

   `021 ResNV CC`

2. Press the [►II] key or [🗀 –] key on the remote commander.

   Remote commander LCD display

   `021 ResOK?`

3. Press the [►II] key or [🗀 –] key on the remote commander once more.

   Remote commander LCD display

   `021 Res***`

   ↓ NV reset (after several seconds)

   `021 Reset!`

4. Press the [■] key to quit the manual mode, and return to the test mode (display check mode).

Temperature Correction

• Adjustment method of temperature correction

1. Select the manual mode of test mode, and set the item number 015 (see page 10).

   Remote commander LCD display

   `015 SetTmp**`

   ***: Adjusted value*

2. Measure the ambient temperature.
3. Adjust with [VOL +], [VOL –] key so that the adjusted value (hexadecimal value) becomes the ambient temperature. (Initial value: 19h = 25 °C, Adjusting range: 80h to 7fh (–128 °C to +127 °C)
4. Press the [►II] key to write the adjusted value.
5. Press the [■] key to quit the manual mode, and return to the test mode (display check mode).

Note : Power supply adjustment auto item feed mode (see page 18) is available to perform the temperature correction and power supply adjustment without entering the manual mode.

Power Supply Manual Adjustment

- **Adjustment sequence**

Adjustment must be done with the following steps.

1. VC1 Low adjustment (item number : 741)
2. VC1 PS adjustment (item number : 742)
3. VC2 Low adjustment (item number : 743)
4. REG1 adjustment (item number : 745)
5. ChgV L adjustment (item number : 751)
6. ChgV H adjustment (item number : 752)
7. CIL (charge current) adjustment (item number : 753)
8. CIH (charge current) adjustment (item number : 754)

- **Setting method of power supply manual adjustment**

1. Make sure that the power supply voltage is 3V(AC adaptor).
2. Select the manual mode of the test mode (see page 17).
3. Set item number.

Note : Power supply adjustment auto item feed mode (see page 18) is available to perform the temperature correction and power supply adjustment without entering the manual mode.

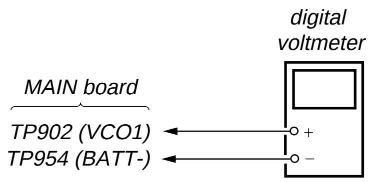
- **Adjustment method of VC1 Low (item number: 741)**

Remote commander LCD display

741 VC1 L **

: Adjusted value

1. Connect a digital voltmeter to the TP902 (VC01) on the MAIN board, and adjust VOL + key (voltage up) or VOL – key (voltage down) so that the voltage becomes $2.15^{+0.005}_{-0.010}$ V.



2. Press the ►II key or the 🗀– key on the remote commander to write the adjusted value.

Adjustment and Connection Location: MAIN board (see page 17)

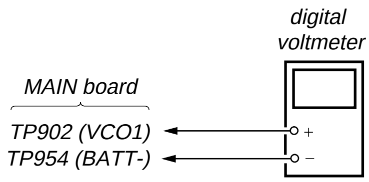
- **Adjustment method of VC1 PS (item number: 742)**

Remote commander LCD display

742 VC1 PS **

**: Adjusted value*

1. Connect a digital voltmeter to the TP902 (VC01) on the MAIN board, and adjust VOL + key (voltage up) or VOL – key (voltage down) so that the voltage becomes $2.15^{+0.005}_{-0.010}$ V.



2. Press the ►II key or the 🗀– key on the remote commander to write the adjusted value.

Adjustment and Connection Location: MAIN board (see page 17)

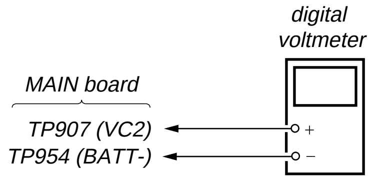
- **Adjustment method of VC2 Low (item number: 743)**

Remote commander LCD display

743 VC2 Lo **

**: Adjusted value*

1. Connect a digital voltmeter to the TP907 (VC2) on the MAIN board, and adjust VOL + key (voltage up) or VOL – key (voltage down) so that the voltage becomes $1.25^{+0.005}_{-0.010}$ V.



2. Press the ►II key or the 🗀– key on the remote commander to write the adjusted value.

Adjustment and Connection Location: MAIN board (see page 17)

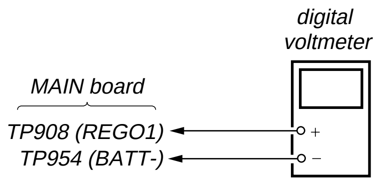
- **Adjustment method of REG1 (item number: 745)**

Remote commander LCD display

745 REG1 **

**: Adjusted value*

1. Connect a digital voltmeter to the TP908 (REG01) on the MAIN board, and adjust VOL + key (voltage up) or VOL – key (voltage down) so that the voltage becomes $1.15^{+0.005}_{-0.010}$ V.



2. Press the ►II key or the 🗀– key on the remote commander to write the adjusted value.

Adjustment and Connection Location: MAIN board (see page 17)

- **Adjustment Method of CHGV_L (item number: 751)**

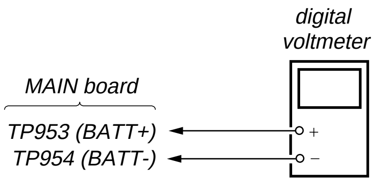
Note: Remove the rechargeable battery.

Remote commander LCD display



✱✱: Adjusted value

1. Connect a digital voltmeter to the TP953(BATT +) and TP954(BATT –) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 1.35 ± 0.01V.



2. Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value.

Adjustment and Connection Location: MAIN board (see page 17)

- **Adjustment Method of CHGV_H (item number: 752)**

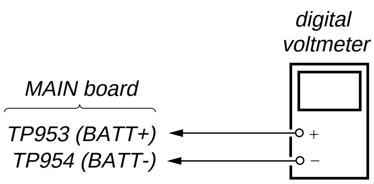
Note: Remove the rechargeable battery.

Remote commander LCD display



✱✱: Adjusted value

1. Connect a digital voltmeter to the TP953(BATT +) and TP954(BATT –) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 1.80 ± 0.01V.



2. Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value.

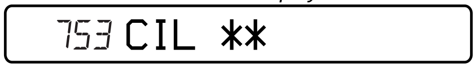
Adjustment and Connection Location: MAIN board (see page 17)

- **Adjustment Method of CIL (Charge current) (item number: 753)**

Note: Remove the rechargeable battery.

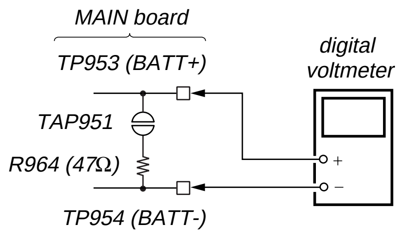
1. Make a solder bridge to short TAP951 on the MAIN board (in order to connect R964(47Ω) between TP953(BATT +) and TP954(BATT –))
2. Turn on the power.
3. Set the manual mode of the test mode and set the item number 753 (see page 10).

Remote commander LCD display



✱✱: Adjusted value

4. Connect a digital voltmeter to the TP953(BATT +) and TP954(BATT –) on the MAIN board, and adjust the [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 1.41 ± 0.02V.



5. Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value.
6. Turn off the power and open the solder bridge on TAP951 on the MAIN board.

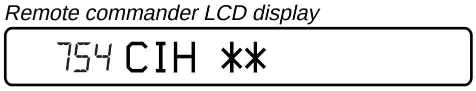
Adjustment and Connection Location: MAIN board (see page 17)

- **Adjustment Method of CIH (Charge current) (item number: 754)**

Note: Remove the rechargeable battery.

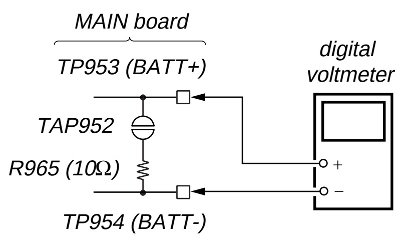
1. Make a solder bridge to short TAP952 on the MAIN board (in order to connect R965(10Ω) between TP953(BATT +) and TP954(BATT –))
2. Turn on the power.
3. Set the manual mode of the test mode and set the item number 754 (see page 17).

Remote commander LCD display



✱✱: Adjusted value

4. Connect a digital voltmeter to the TP953(BATT +) and TP954(BATT –) on the MAIN board, and adjust the [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 1.40 ± 0.02V.

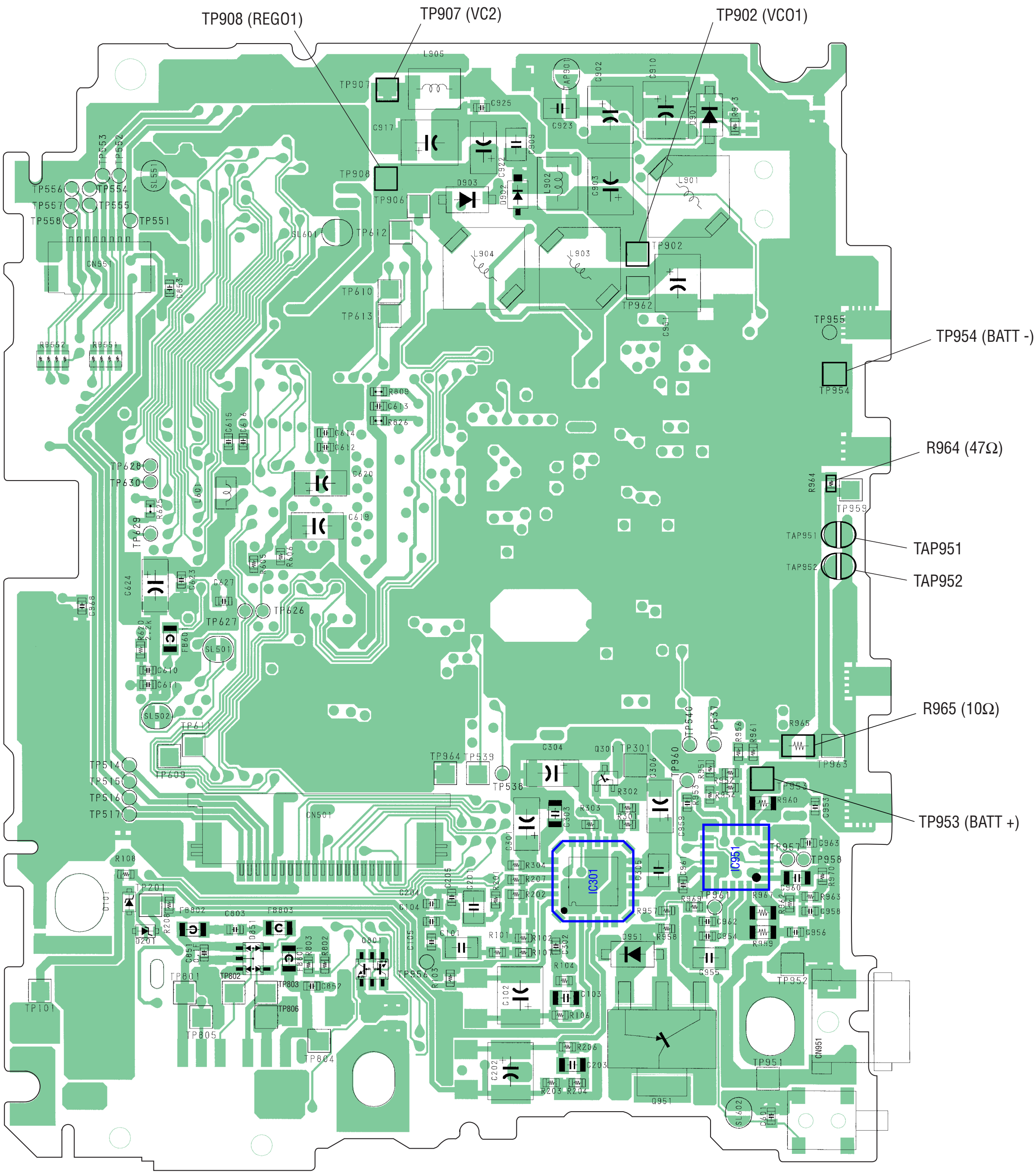


5. Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value.
6. Turn off the power and open the solder bridge on TAP952 on the MAIN board.

Adjustment and Connection Location: MAIN board (see page 17)

Adjustment/checking and Connection Location:

【MAIN BOARD】(SIDE A)



Power Supply Adjustment Auto Item Feed

Note : This mode is available to perform the temperature correction and power supply adjustment without entering the manual mode.

• Setting method of power supply adjustment auto item feed mode.

1. Set the test mode (see page 9)
2. Press the [I◀◀] or [VOL –] key to activate the overall adjustment mode.

Remote commander LCD display

```
000 Assy**
```

3. Press the [VOL –] key, or press the [P MODE] key on the remote commander to set the temperature correction mode.

Remote commander LCD display

```
015 SetTmp**
```

∗∗: Adjusted value

4. To change the initial value (hexadecimal), adjust with the [VOL +] or [VOL –] key.
   Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value, and the item number increases automatically.
   When not writing the adjusted value, press the [▶▶I] key to move to the next item.

Remote commander LCD display

```
741 VC1 L  **
```

∗∗: Adjusted value

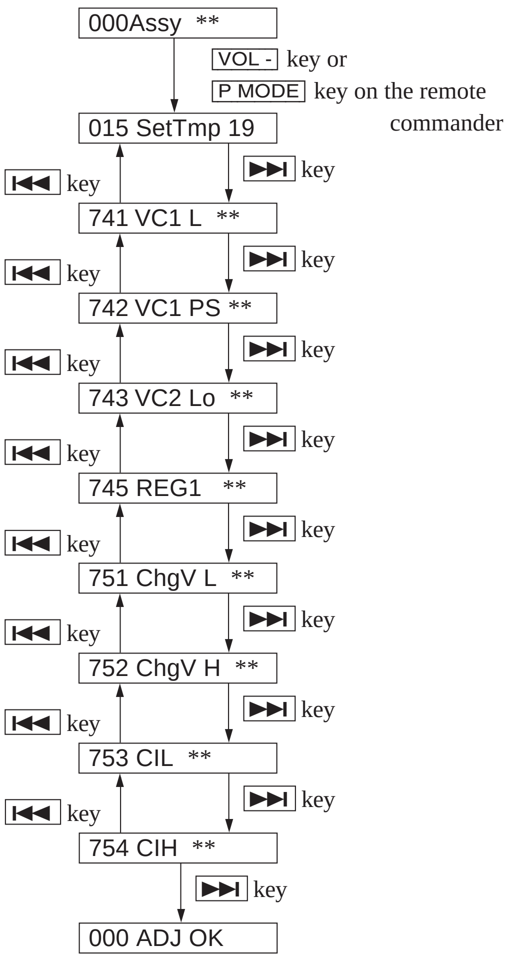
5. Connect a digital voltmeter to the test points on the MAIN board, and adjust the voltage with the [VOL +] or [VOL –] key. (see page 15 to 17)
   Press the [▶II] key on the set or the [▭ –] key on the remote commander to write the adjusted value, and the item number increases automatically.
6. When not writing the adjusted value, press the [▶▶I] key to move to the next item.
   The [I◀◀] key is available to back to the last item.
7. The following message is displayed after all power supply adjustments finish.

Remote commander LCD display

```
000 ADJ OK
```

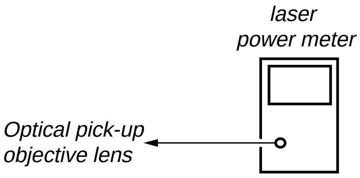
8. Press the [■] key to return to the test mode (display check mode).

Configuration of power supply adjustment auto item feed



Laser Power Check and Adjustment

Connection :



Checking and Adjustment Method :

1. Select the manual mode of test mode (see page 10), and set the laser power adjusting mode (item number 010).

Remote commander LCD display



2. Press the [I◀◀] key continuously until the optical pick-up moves to the most inward track.
3. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
4. Press the [▶▶I] key, and set the laser MO read adjustment mode (item number 011).

Remote commander LCD display



5. Check that the laser power meter reading is 0.754 ± 0.13 mW.
6. If the reading value is not satisfied, adjust with the [VOL +] or [VOL −] key so that the laser power meter reading becomes the specification value. Press the [▶II] key or [🗀 −] key on the remote commander to write the adjusted value.
7. Press the [▶▶I] key, and set the laser CD read adjustment mode (item number 012).

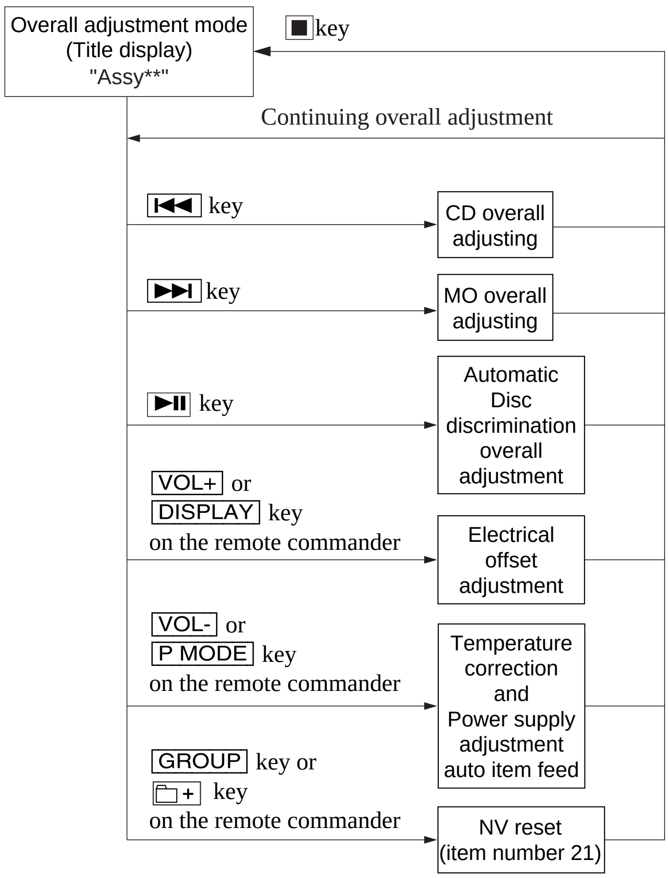
Remote commander LCD display



8. Check that the laser power meter reading is 0.896 ± 0.16 mW.
9. If the reading value is not satisfied, adjust with the [VOL +] or [VOL −] key so that the laser power meter reading becomes the specification value. Press the [▶II] key or [🗀 −] key on the remote commander to write the adjusted value.
10. Press the [■] key to quit the manual mode, and activate the test mode (display check mode).

Overall Adjustment Mode

- **Configuration of overall adjustment mode**



- **Overall adjustment mode (title display)**

Remote commander LCD display

```
000 Assy**
```

: (Disc mark) At end of power supply adjustment: Outside lit
**: Left side = MO overall adjustment information
F*: MO overall adjustment completed
1*: Manual adjustment exists (overall adj. not completed)
0*: Not adjusted
Right side = CD overall adjustment information
*F: CD overall adjustment completed
*1: Manual adjustment exists (overall adj. not completed)
*0: Not adjusted

Note: Adjust the CD first, when performing adjustment.

- **Adjustment method of CD and MO overall adjustment mode**

1. Set the test mode (see page 9).
2. Press the [I◀◀] or [VOL –] key to activate the overall adjustment mode.

Remote commander LCD display

```
000 Assy11
```

3. Insert CD disc in the set, and press thethe [I◀◀] key to set the CD overall adjustment mode. Automatic adjustments are made.

Remote commander LCD display

```
XXX CD RUN
```

XXX: Item number for which an adjustment is being executed.

4. In case of CD overall adjustment NG, readjust from the NV reset (see page 14). The temperature correction (see page 14) may be omitted.

Remote commander LCD display

```
000 *** NG
```

**: NG item number.

5. If OK through the CD overall adjustments, then perform MO overall adjustments.

Remote commander LCD display

```
000 CD OK
```

6. Insert MO disc in the set, and press the [▶▶I] key to set the MO overall adjustment mode. Automatic adjustments are made.

Remote commander LCD display

```
XXX MO RUN
```

XXX: Item number for which an adjustment is being executed.

7. In case of MO overall adjustment NG, readjust from the NV reset (see page 14). The temperature correction (see page 14) may be omitted.

Remote commander LCD display

```
000 *** NG
```

**: NG item number.

8. If OK through the MO overall adjustments, press the [■] key to return to the test mode and terminate the overall adjustment mode.

Remote commander LCD display

```
000 MO OK
```

- **Overall Adjustment error message**

The following message will be displayed if adjustment procedure is mistaken in the CD and MO overall adjustment.

Message	Display timing	Description
CLOSE!	During CD/MO/DISC automatic distinction overall adjustment	DISC is not inserched.
Set CD!	During MO/DISC automatic distinction overall adjustment During offset adjustment	• CD overall adjustment is not completed in the MO overall adjustment. • CD and MO overall adjustment is not completed in the offset adjustment.
Set MO!	During offset adjustment	MO overall adjustment is not completed in the offset adjustment.
NoTmp!	During CD/MO/DISC automatic distinction overall adjustment	Temperature correction (item number 015) is not finished.

- **CD and MO Overall Adjustment Items**

1. CD overall adjustment items

Item No.	Description
761	VC,VR power supply H/L selection
300	HPIT setting • servo OFF
561	SLED inward movement
562	SLED outward movement
High reflection electrical adjustment	
312	Laser ON • Focus UP • vc correction
ALFA offset adjustment	
313	IJ offset adjustment
314	FE offset adjustment
HPIT adjustment	
320	Focus servo ON
324	TE offset adjustment 1
321	TE gain adjustment
328	TWPP gain adjustment
324	TE offset adjustment 1
332	TE offset adjustment 2
330	Tracking servo ON
336	ABCD gain adjustment
337	KF gain correction
338	RF gain adjustment
344	FCS gain adjustment
345	TRK gain adjustment
521	Two-axis sensitivity (inner position)
522	Two-axis sensitivity (outer position)
341	Focus_BIAS
300	HPIT setting • servo OFF

2. MO overall adjustment items

Item No.	Description
716	VC,VR power supply H/L selection
100	R_GRV setting • servo OFF
Low reflection electrical offset adjustment	
112	Laser ON • Focus UP vc correction
ALFA offset adjustment	
113	IJ offset adjustment
114	FE offset adjustment
118	Wpp denominator offset adjustment
LPIT adjustment	
200	LPIT setting • servo OFF
561	SLED inward movement
220	Focus servo ON
224	TE offset adjustment 1
221	TE gain adjustment
224	TE offset adjustment 1
232	TE offset adjustment 2
230	Tracking servo ON
236	ABCD gain adjustment
237	KF gain correction
238	RF gain adjustment
244	Focus gain adjustment
245	Tracking gain adjustment
READ GRV adjustment 1	
100	R_GRV setting • servo OFF
562	SLED outward movement
120	Focus servo ON
122	TON offset adjustment
121	TE gain adjustment
122	TON offset adjustment
123	TEIN offset adjustment
124	TWPP offset adjustment 1
130	Tracking servo ON
131	TWPP offset adjustment 1
136	ABCD gain adjustment
137	KF gain correction
139	ADIP BPF f0 adjustment
144	Focus gain adjustment
145	Tracking gain adjustment
134	TWPP gain adjustment
131	TWPP offset adjustment 1
132	TWPP offset adjustment 2
149	TWPP OP offset adjustment
138	RF gain adjustment
141	FOCUS_BIAS
549	Focus drive inner/outer circumference difference measurement
562	SLED outward movement
548	Traverse measurement process
035	Stray light offset measurement
100	R_GRV setting • servo OFF

Resume Clear

Perform the Resume clear when all adjustments completed.

- **Resume clear setting method**

1. Select the manual mode of the test mode, and set item number 043 (see page 10).

   Remote commander LCD display

   043 Resume 00

2. Press the [VOL +] key once to set the adjusted value to 01.

   Remote commander LCD display

   043 ###S01

3. Press the [▶II] key or the [–] key on the remote commander.

   Remote commander LCD display

   043 Res***

   ↓ *Resume clear complete*

   043 ResClr

4. Press the [■] key to return to the test mode (display check mode).

Rewriting the Patch Data at Replacement of the MAIN Board

Rewrite the program correction data in the nonvolatile memory at replacement of the MAIN board.

* Method for rewriting the correction data (when using version 1.000)

1. Select the manual mode of the test mode, and set the item number 022 (see page 10).

   Remote commander LCD display

   `022 PatClr CC`

2. Press the ▶II key or press the ▭– key on the remote commander to reset the patch data. (Reset is complete if the adjusted value changes to DD.)

   Remote commander LCD display

   `022 ***SDD`

3. Press the ▶▶I key to set the item number 023.

   Remote commander LCD display

   `023 NoPach`

   (When not patched)

   `023 PV1.0C`

   (When patched, revision is displayed)

4. Press the VOL + key once to set the adjusted value to 01.

   Remote commander LCD display

   `023 ***S01`

5. Press the GROUP key on the set or press the DISPLAY key on the remote commander for several seconds to enter the RAM monitor.

   Remote commander LCD display

   `023 0C80**`

   adjusted value (blinking : cursor)

6. Set the adjusted value while referring to the patch data list using the following keys.

   Remote commander LCD display

   `023 0C80**`

   address value — *adjusted value (blinking : cursor)*

* Keys available when the cursor is on the adjusted value

P MODE key on the remote commander : adjusted value + 10(h)
SOUND key on the remote commander : adjusted value – 10(h)
VOL + key : adjusted value + 01(h)
VOL – key : adjusted value – 01(h)
■ key : moving the cursor to the address value
▶II key : writing the adjusted value

7. Press the ▶II key to write the adjusted value.

   Remote commander LCD display

   `023 0C808E`

   address value (blinking : cursor) — *adjusted value (data at address 0C80)*

8. Press the VOL + key to set the address value to the next address for adjustment.

   Remote commander LCD display

   `023 0C81**`

   address value (blinking : cursor) — *adjusted value*

* Keys available when the cursor is on the address value

DISPLAY key on the remote commander : address value + 1000(h)
P MODE key on the remote commander : address value + 0100(h)
SOUND key on the remote commander : address value – 0100(h)
▭– key on the remote commander : address value + 0010(h)
VOL + key : adjusted value + 0001(h)
VOL – key : adjusted value – 0001(h)
■ key : moving the cursor to the adjusted value

9. Press the ■ key to move the cursor to the adjusted value.

   Remote commander LCD display

   `023 0C81**`

   address value — *adjusted value (blinking : cursor)*

10. While referring to the patch data list repeat the data correction write procedure from step 6 to 9 until the address 0D43 is completed (until writing the last value at step 7).

    Remote commander LCD display

    `023 0D4300`

    address value (blinking : cursor) — *adjusted value*

11. Press the GROUP key on the set or press the DISPLAY key on the remote commander for several seconds to exit the RAM monitor.

    Remote commander LCD display

    `023 Patch 01`

12. Press the ▶II key or press the ▭– key on the remote commander to write all patch data to the nonvolatile memory.

    Remote commander LCD display

    `023 ***SCC`

    ↓ *Writing complete*

    `023 ***SDD`

13. Turn off the power.

- **Patch data list (Ver. 1.000)**

No.	Address value	Adjusted value
0	0C80	8E
1	0C81	D6
2	0C82	00
3	0C83	00
4	0C84	4A
5	0C85	70
6	0C86	00
7	0C87	DE
8	0C88	10
9	0C89	A7
10	0C8A	00
11	0C8B	00
12	0C8C	00
13	0C8D	DE
14	0C8E	06
15	0C8F	49
16	0C90	F8
17	0C91	A5
18	0C92	00
19	0C93	00
20	0C94	01
21	0C95	49
22	0C96	FA
23	0C97	20
24	0C98	C0
25	0C99	57
26	0C9A	00
27	0C9B	00
28	0C9C	00
29	0C9D	DE
30	0C9E	01
31	0C9F	A9
32	0CA0	10
33	0CA1	45
34	0CA2	00
35	0CA3	00
36	0CA4	A0
37	0CA5	C3
38	0CA6	B0
39	0CA7	E1
40	0CA8	03
41	0CA9	00
42	0CAA	00
43	0CAB	2A
44	0CAC	01
45	0CAD	C0
46	0CAE	D1
47	0CAF	E5
48	0CB0	08
49	0CB1	80
50	0CB2	A0
51	0CB3	E3
52	0CB4	08
53	0CB5	C0
54	0CB6	CC
55	0CB7	E1
56	0CB8	01

No.	Address value	Adjusted value
57	0CB9	C0
58	0CBA	C1
59	0CBB	E5
60	0CBC	02
61	0CBD	20
62	0CBE	D1
63	0CBF	E5
64	0CC0	00
65	0CC1	5F
66	0CC2	BD
67	0CC3	E8
68	0CC4	0E
69	0CC5	F0
70	0CC6	B0
71	0CC7	E1
72	0CC8	00
73	0CC9	00
74	0CCA	00
75	0CCB	00
76	0CCC	15
77	0CCD	00
78	0CCE	D7
79	0CCF	E5
80	0CD0	00
81	0CD1	80
82	0CD2	A0
83	0CD3	E3
84	0CD4	20
85	0CD5	80
86	0CD6	C7
87	0CD7	E5
88	0CD8	BC
89	0CD9	86
90	0CDA	C7
91	0CDB	E5
92	0CDC	FF
93	0CDD	80
94	0CDE	A0
95	0CDF	E3
96	0CE0	28
97	0CE1	80
98	0CE2	C7
99	0CE3	E5
100	0CE4	09
101	0CE5	80
102	0CE6	A0
103	0CE7	E3
104	0CE8	29
105	0CE9	80
106	0CEA	C7
107	0CEB	E5
108	0CEC	04
109	0CED	80
110	0CEE	A0
111	0CEF	E3
112	0CF0	1E
113	0CF1	80

No.	Address value	Adjusted value
114	0CF2	C7
115	0CF3	E5
116	0CF4	00
117	0CF5	5F
118	0CF6	BD
119	0CF7	E8
120	0CF8	0E
121	0CF9	F0
122	0CFA	B0
123	0CFB	E1
124	0CFC	00
125	0CFD	00
126	0CFE	00
127	0CFF	00
128	0D00	00
129	0D01	00
130	0D02	00
131	0D03	00
132	0D04	00
133	0D05	00
134	0D06	00
135	0D07	00
136	0D08	00
137	0D09	00
138	0D0A	00
139	0D0B	00
140	0D0C	00
141	0D0D	00
142	0D0E	00
143	0D0F	00
144	0D10	00
145	0D11	00
146	0D12	00
147	0D13	00
148	0D14	00
149	0D15	00
150	0D16	00
151	0D17	00
152	0D18	00
153	0D19	00
154	0D1A	00
155	0D1B	00
156	0D1C	18
157	0D1D	10
158	0D1E	9F
159	0D1F	E5
160	0D20	00
161	0D21	00
162	0D22	91
163	0D23	E5
164	0D24	40
165	0D25	30
166	0D26	A0
167	0D27	E3
168	0D28	03
169	0D29	00
170	0D2A	C0

No.	Address value	Adjusted value
171	0D2B	E1
172	0D2C	00
173	0D2D	00
174	0D2E	81
175	0D2F	E5
176	0D30	00
177	0D31	00
178	0D32	81
179	0D33	E2
180	0D34	00
181	0D35	5F
182	0D36	BD
183	0D37	E8
184	0D38	0E
185	0D39	F0
186	0D3A	B0
187	0D3B	E1
188	0D3C	64
189	0D3D	18
190	0D3E	00
191	0D3F	02
192	0D40	00
193	0D41	00
194	0D42	00
195	0D43	00

Rewriting the NV values (Ver. 1.000)

• Rewriting the NV values procedure

1. Select manual mode of the test mode, and set item number 760 (see page 10).
2. Press the [▶▶I] key to set item number 761.

Remote commander LCD display

761 P1 num **

***: Adjusted value*

3. Adjust with the [VOL +] key (adjusted value up) or [VOL –] key (adjusted value down) so that the adjusted value becomes 7B.
4. Press the [▶II] key or press the [🗀–] key on the remote commander to write the adjusted value.
5. Press the [▶▶I] key to set item number 762.

Remote commander LCD display

762 P1 dat **

***: Adjusted value*

6. Adjust with the [VOL +] key (adjusted value up) or [VOL –] key (adjusted value down) so that the adjusted value becomes 04.
7. Press the [▶II] key or press the [🗀–] key on the remote commander to write the adjusted value.
8. Press the [▶▶I] key to set item number 763.

Remote commander LCD display

763 P2 num **

***: Adjusted value*

9. Adjust with the [VOL +] key (adjusted value up) or [VOL –] key (adjusted value down) so that the adjusted value becomes 84.
10. Press the [▶II] key or press the [🗀–] key on the remote commander to write the adjusted value.
11. Press the [▶▶I] key to set item number 764.

Remote commander LCD display

764 P2 dat **

***: Adjusted value*

12. Adjust with the [VOL +] key (adjusted value up) or [VOL –] key (adjusted value down) so that the adjusted value becomes 2E.
13. Press the [▶II] key or press the [🗀–] key on the remote commander to write the adjusted value.
14. Press the [▶▶I] key to set item number 765 .

Remote commander LCD display

765 P3 num **

***: Adjusted value*

15. Adjust with the [VOL +] key (adjusted volue up) ot [VOL –] key (adjusted value down) so that the adjusted value becomes 81 .
16. Press the [▶II] key or press the [🗀–] key on the remote commander to write the adjusted value .
17. Press the [▶▶I] key to set item number 766 .

Remote commander LCD display

766 P3 dat **

***: Adjusted value*

18. Adjust with the [VOL +] key (adjusted value up) or [VOL –] key (adjusted value down) so that the adjusted value becomes 00 .
19. Press the [▶II] key or press the [▭ –] key on the remote commander to write the adjusted value .
20. Return to the test mode (display check mode) by pressing the [■] key.

SECTION 6
DIAGRAMS

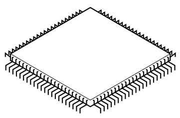
Common note on Printed Wiring Board:
- ——— : parts extracted from the conductor side.
- ▬ : Pattern from the side which enables seeing.
(The other layer's patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

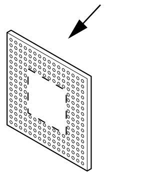
- Main board is four-layer printed board.
However, the patterns of layers 2 and 3 have not been included in this diagrams.

∗ Replacement of IC501, IC601 on main board requires a special tool.

- Lead Layouts



Lead layout of conventional IC



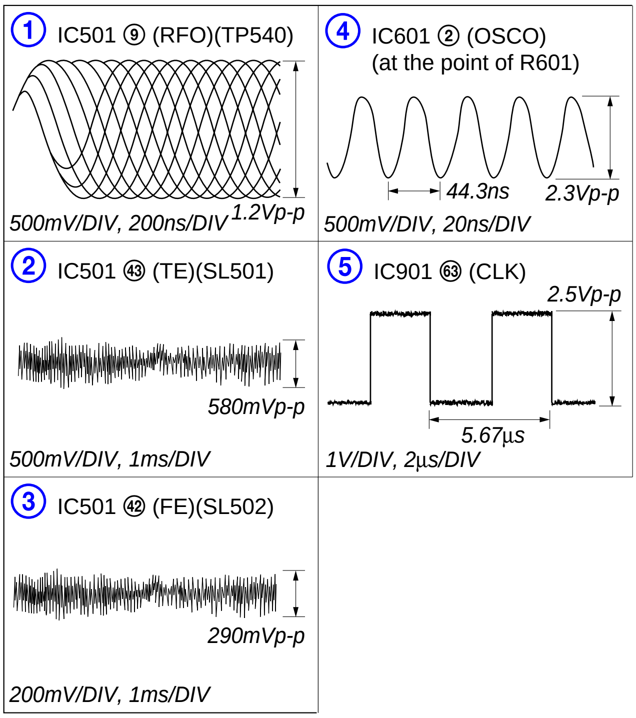
CSP (chip size package)

Common note on Schematic Diagram:
- All capacitors are in μF unless otherwise noted. pF: μμF
50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.

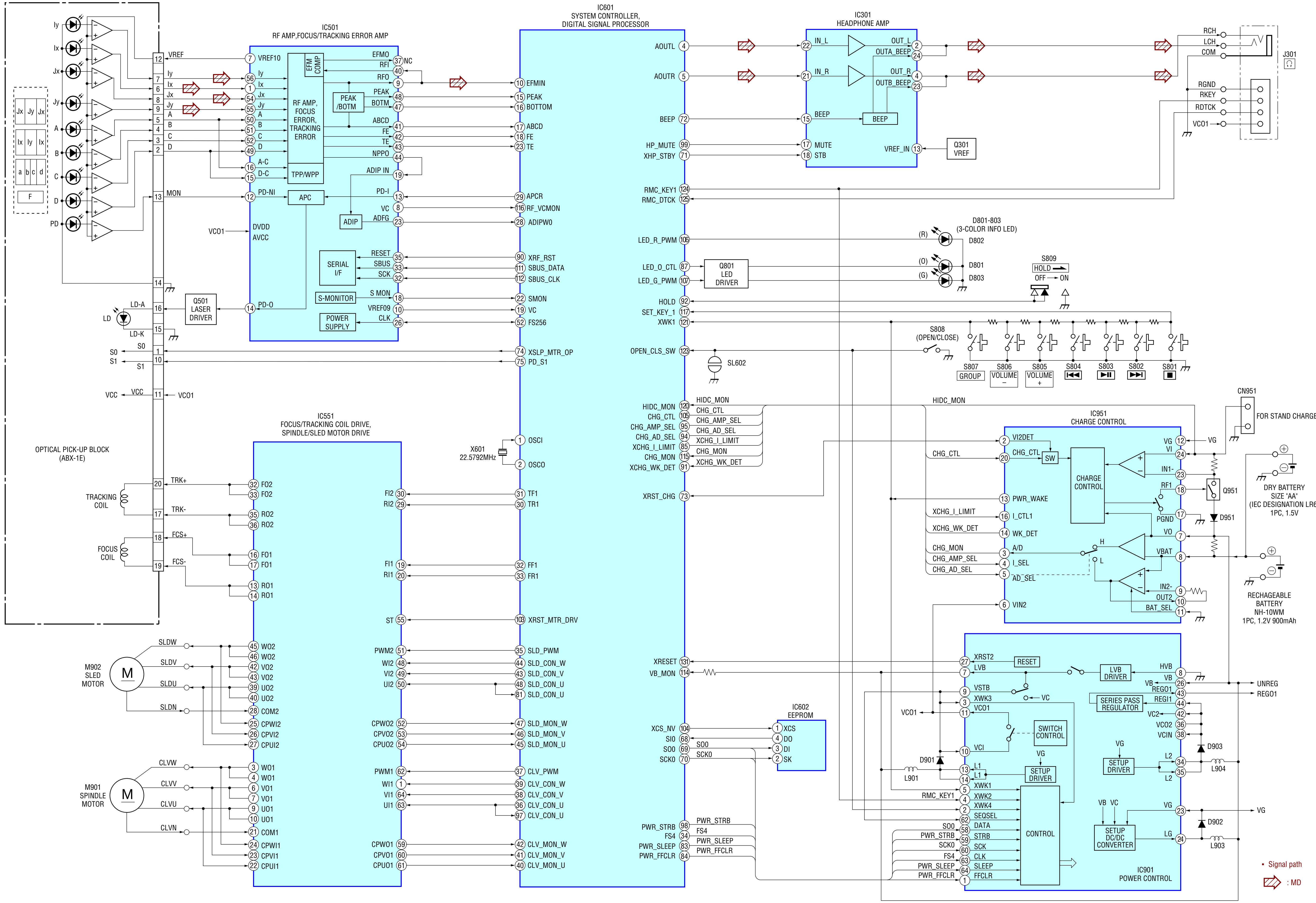
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬ : B+ Line.
- Total current is measured with Minidisc installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
no mark : PB
∗ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ).
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
⇨ : MD

- **Waveforms**

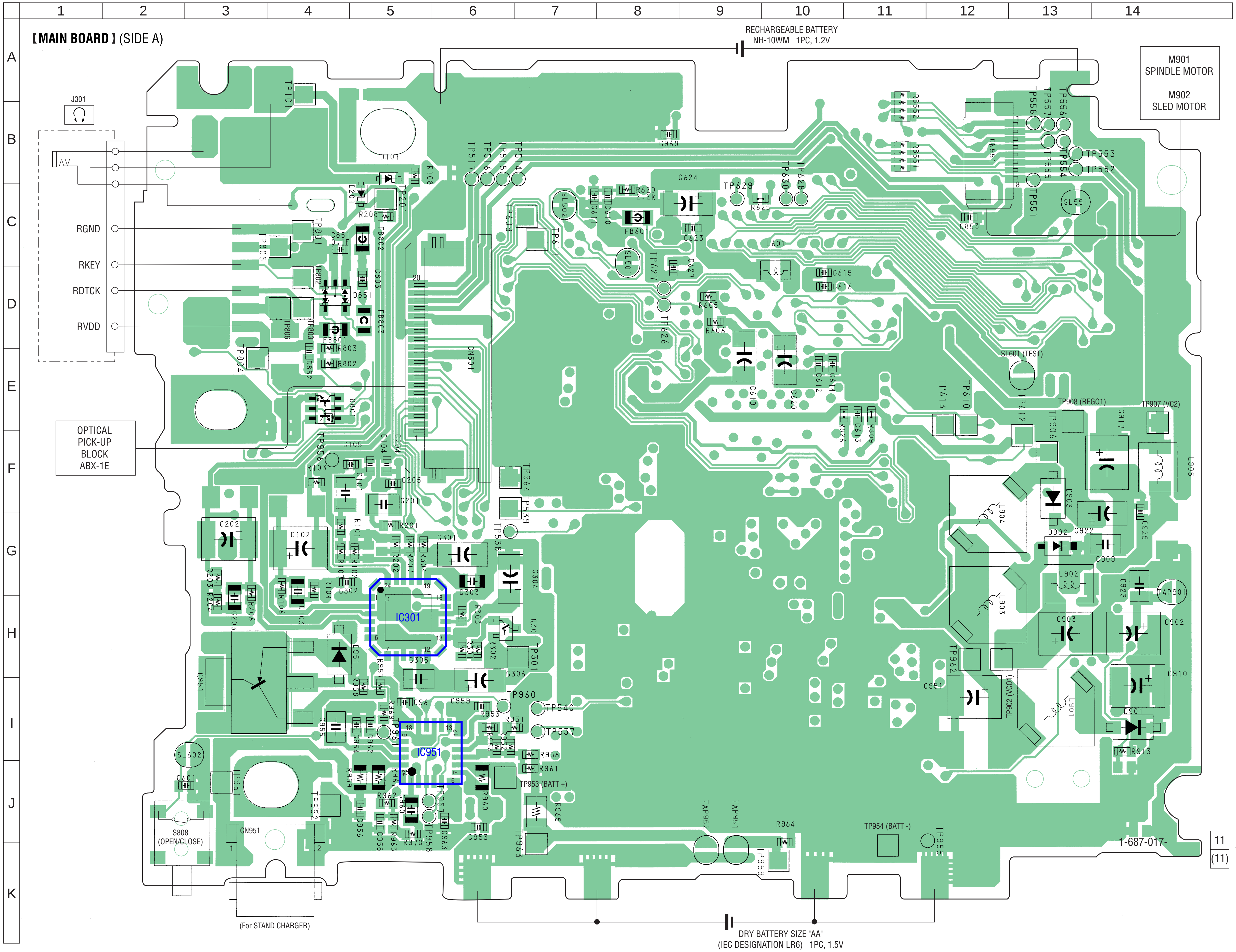


6-1. Block Diagrams



6-2. Printed Wiring Boards — MAIN Board (Side A) —

• LF : Uses unleaded solder.

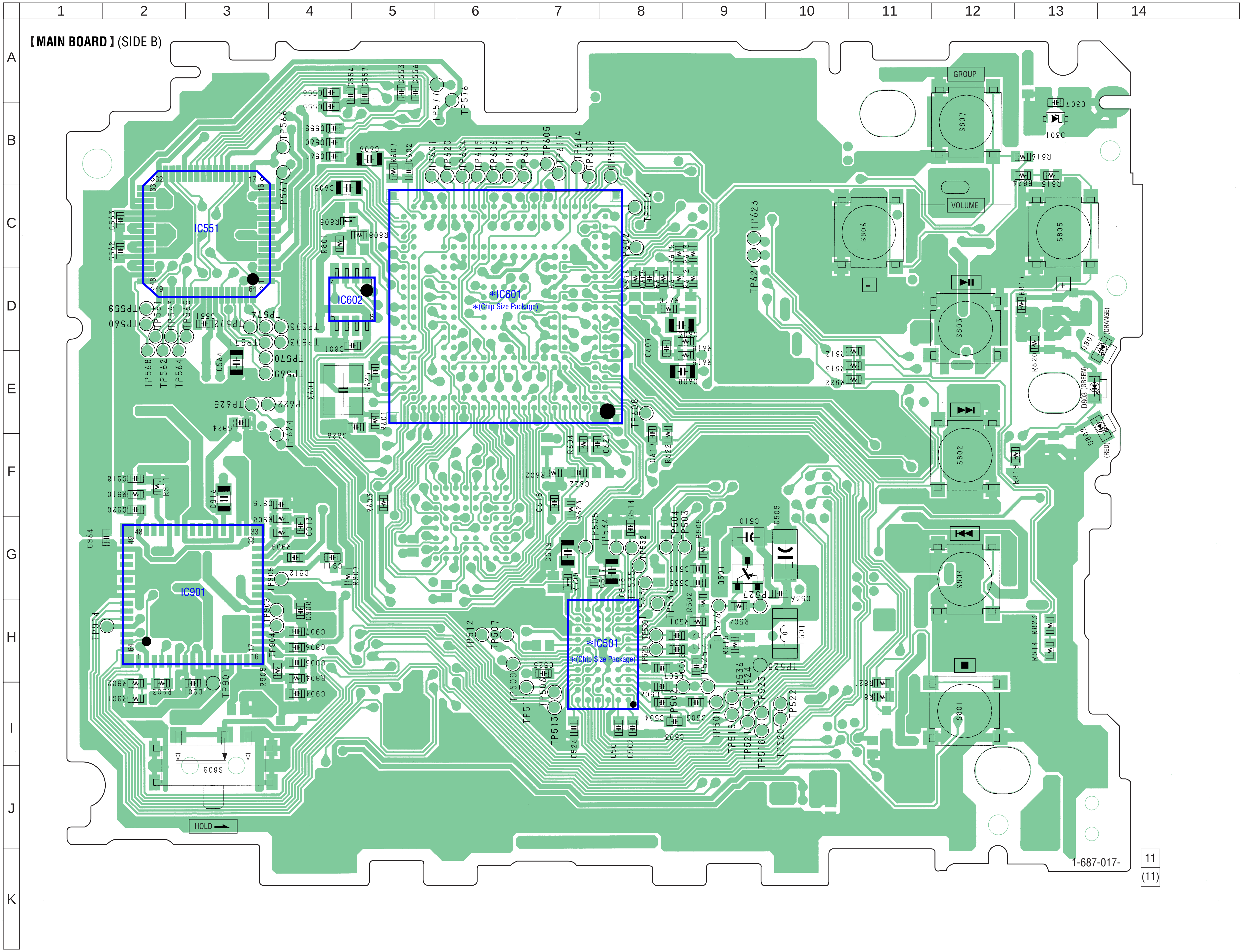


• Semiconductor Location (SIDE A)

Ref. No.	Location
D101	B-5
D201	C-4
D851	D-5
D901	I-14
D902	G-13
D903	F-13
D951	H-5
IC301	H-5
IC951	I-5
Q301	H-7
Q801	E-5
Q951	I-3

6-3. Printed Wiring Boards — MAIN Board (Side B) —

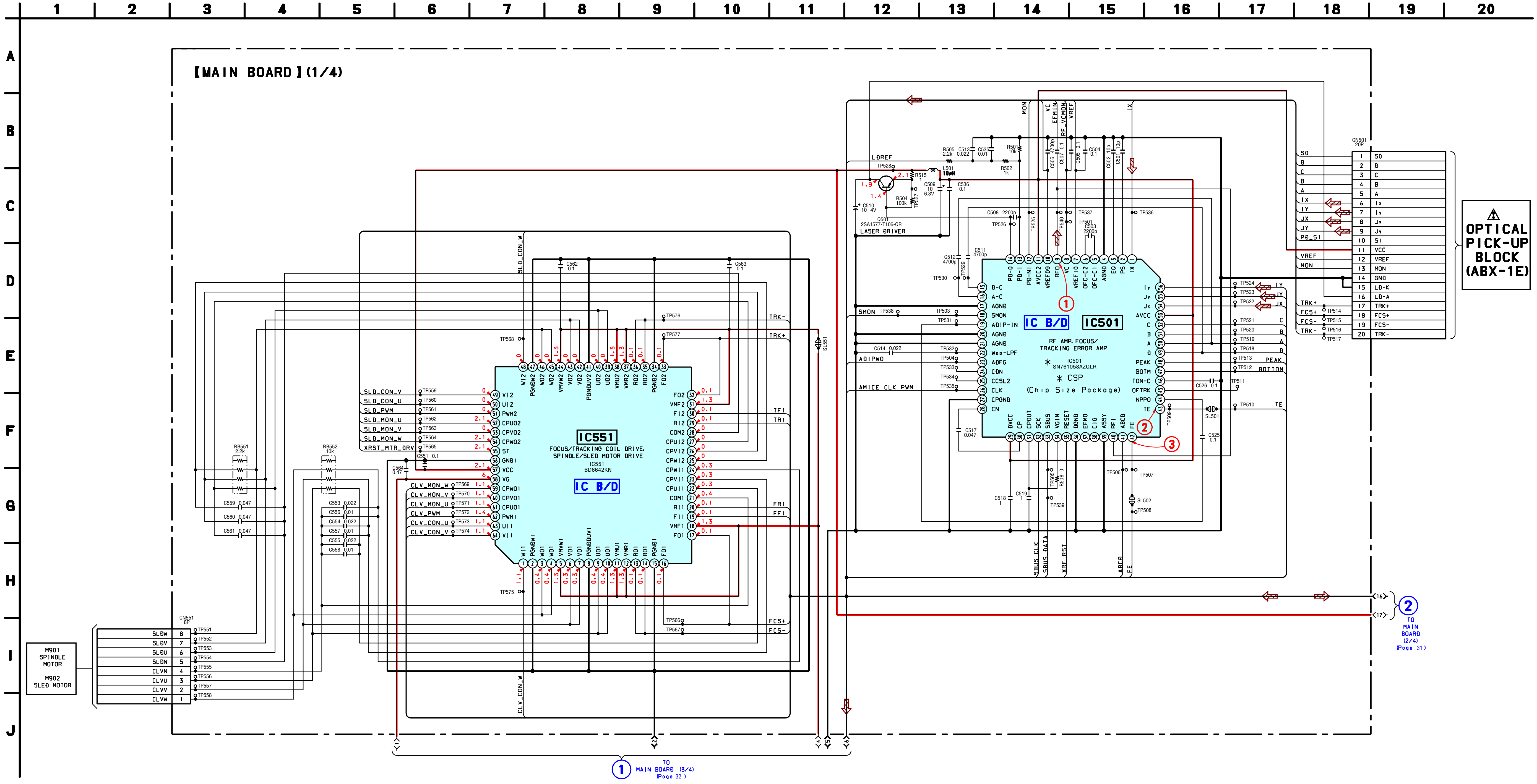
• : Uses unleaded solder.



• Semiconductor Location (SIDE B)

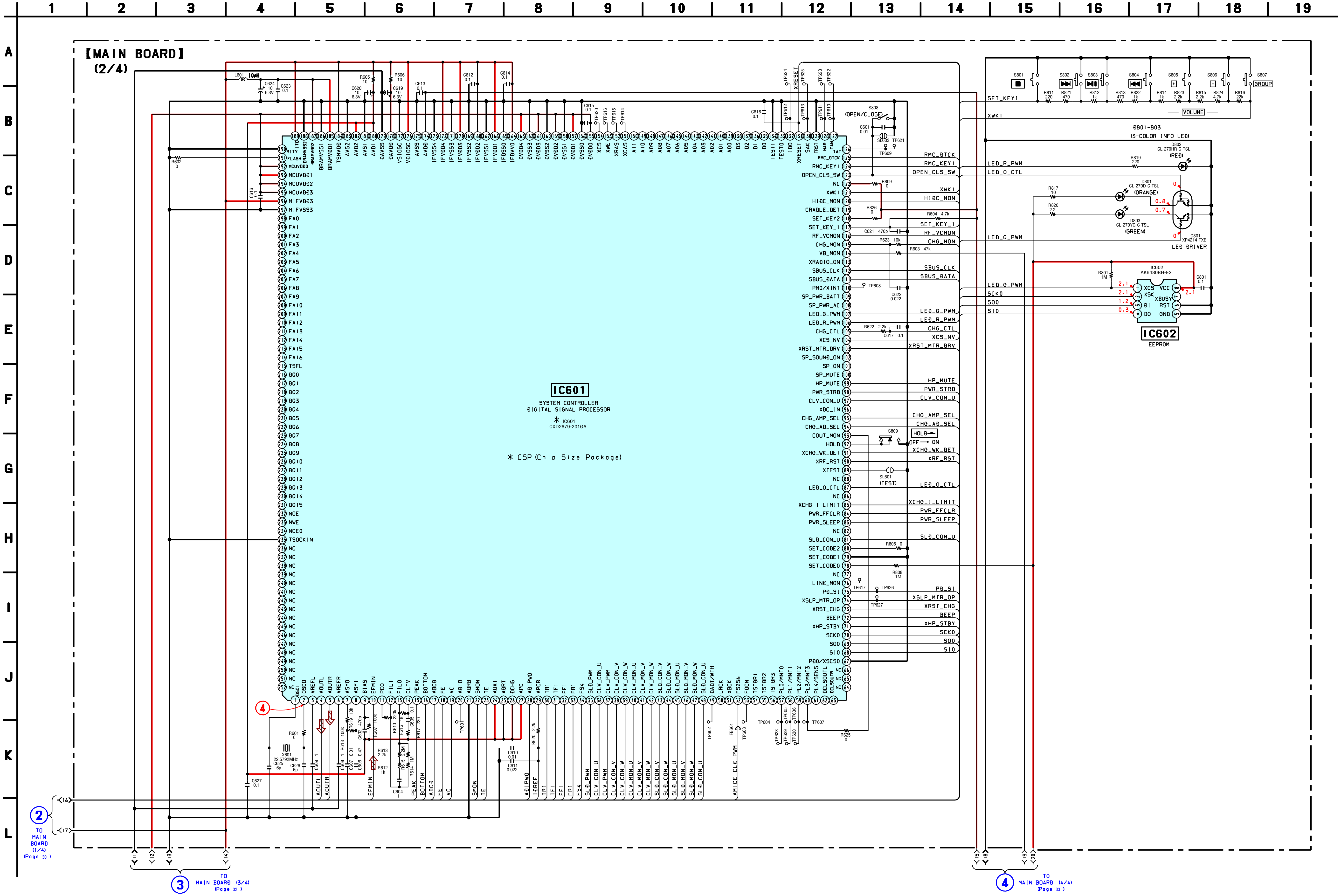
Ref. No.	Location
D301	B-13
D801	D-13
D802	F-13
D803	E-13
IC501	H-7
IC551	C-3
IC601	D-6
IC602	D-4
IC901	G-3
Q501	G-9

6-4. Schematic Diagrams — MAIN Board (1/4) — • See page 26 for Waveforms. • See page 34 for IC Block Diagrams.

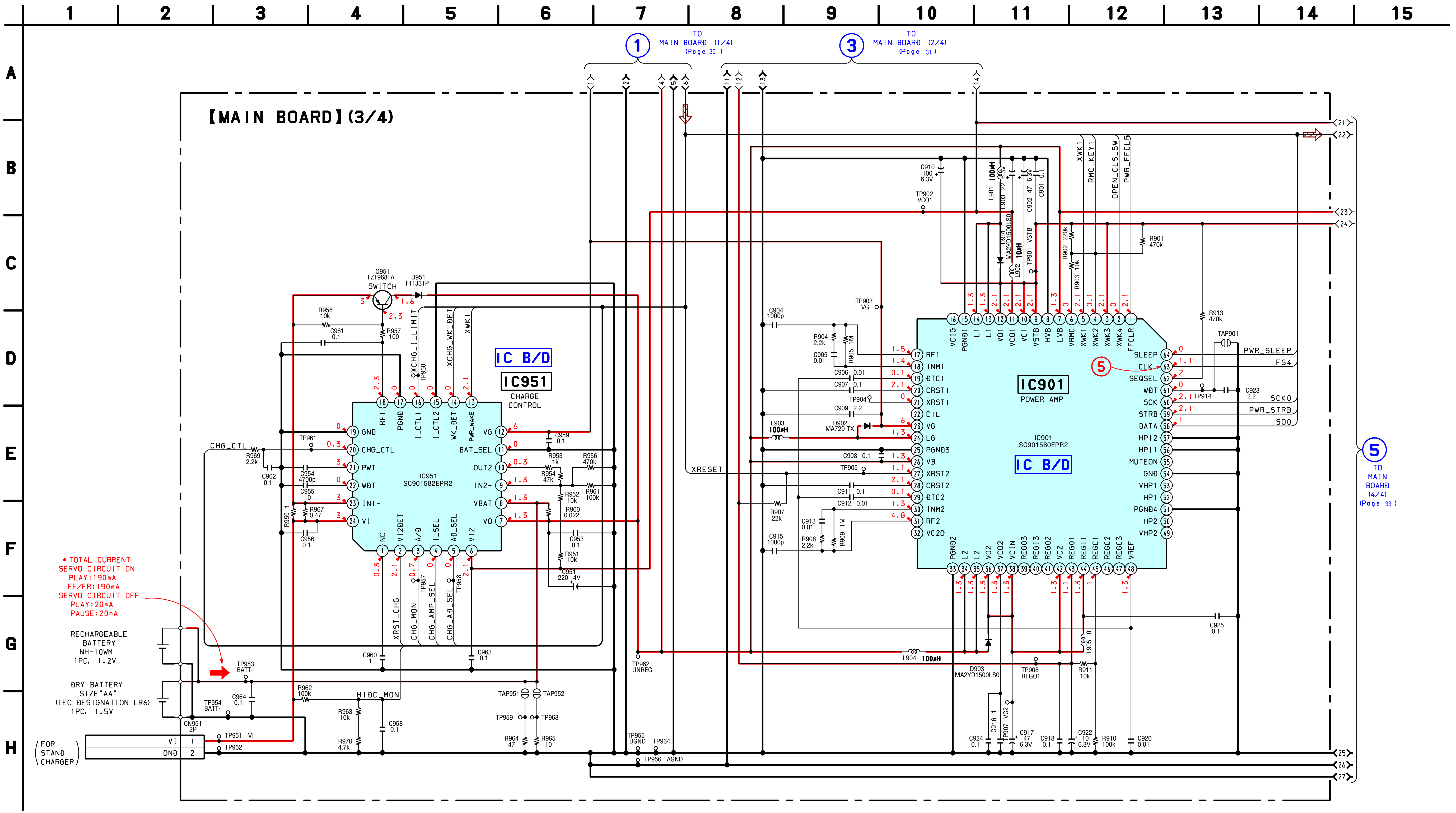


6-5. Schematic Diagrams — MAIN Board (2/4) —

• See page 26 for Waveforms.

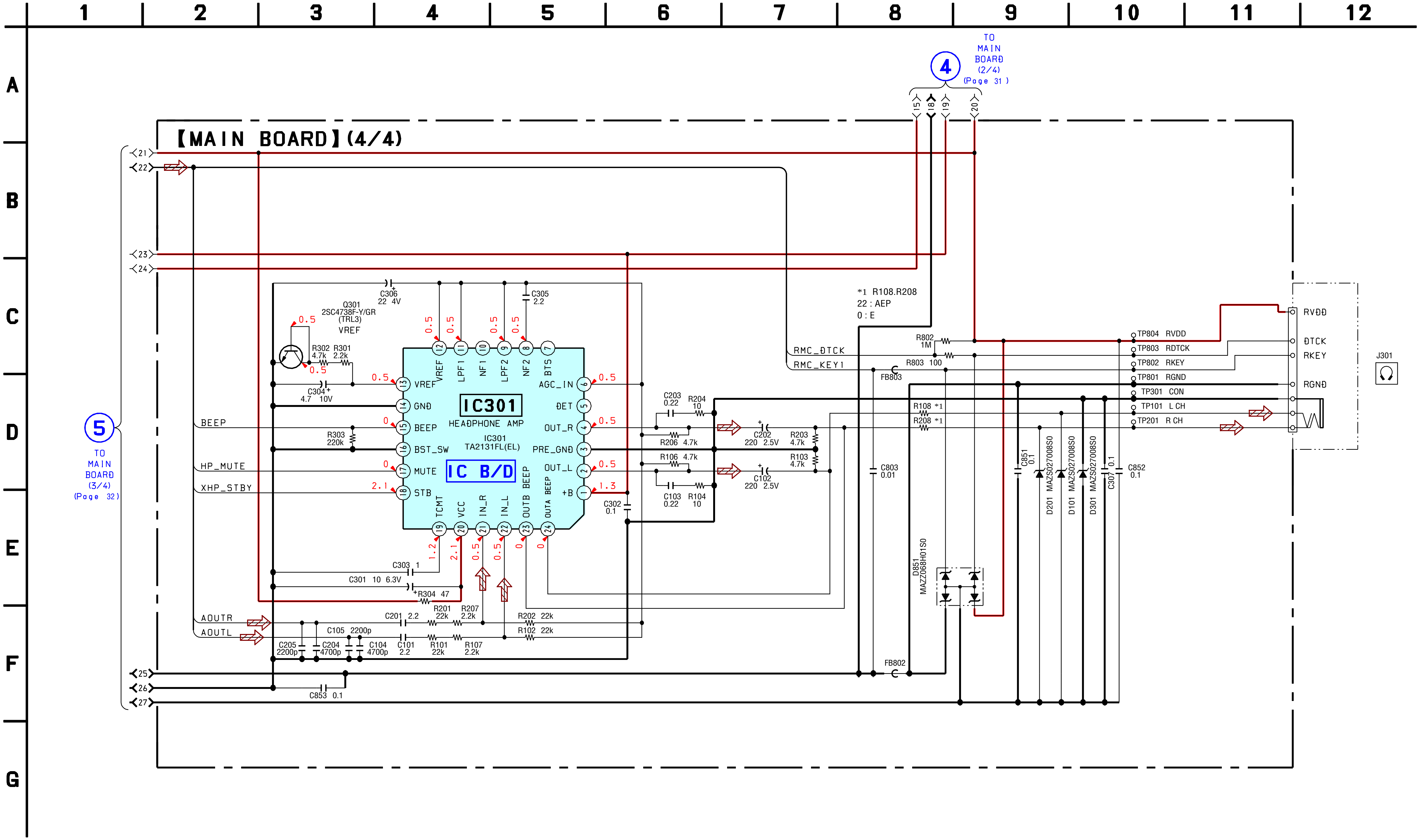


6-6. Schematic Diagrams — MAIN Board (3/4) — • See page 26 for Waveforms. • See page 35 for IC Block Diagrams.



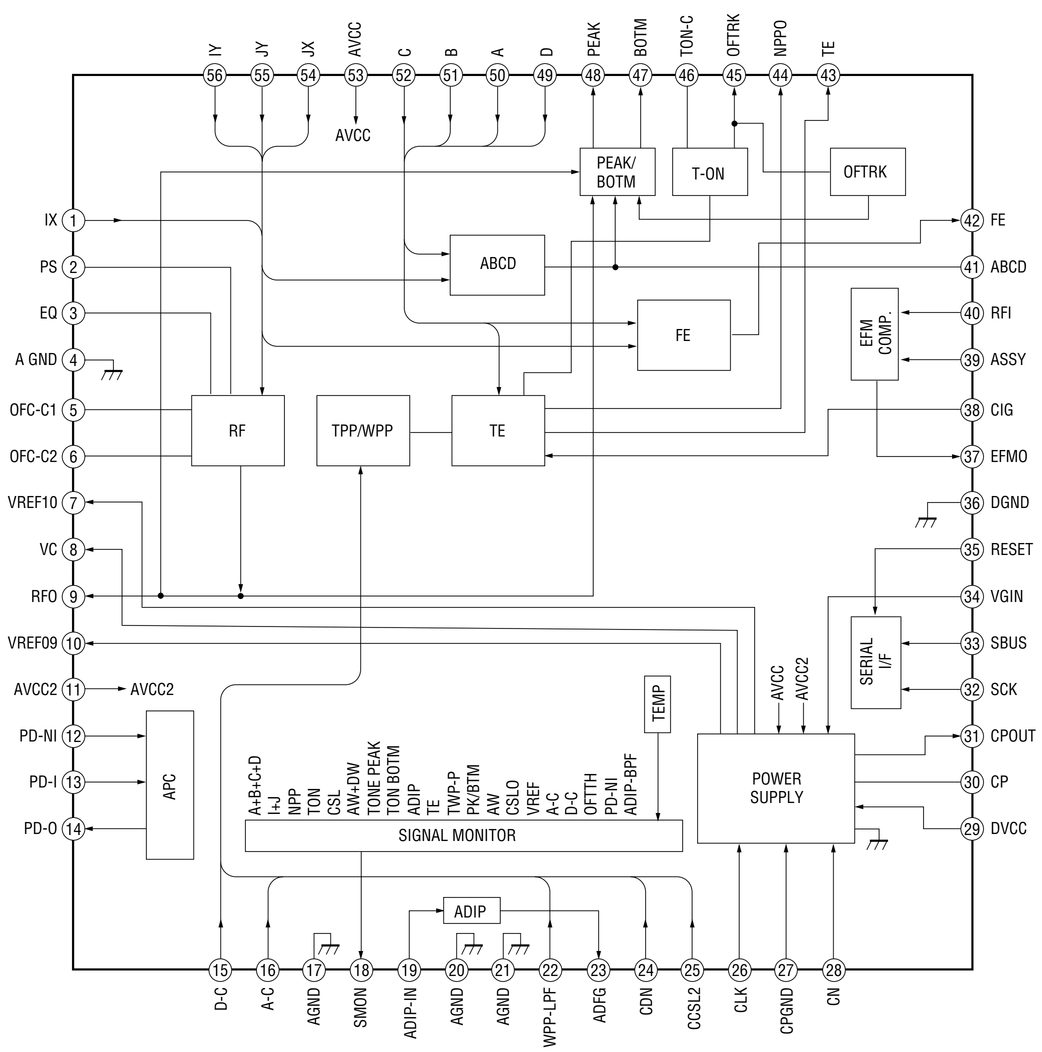
32

6-7. Schematic Diagrams — MAIN Board (4/4) — • See page 34 for IC Block Diagrams.

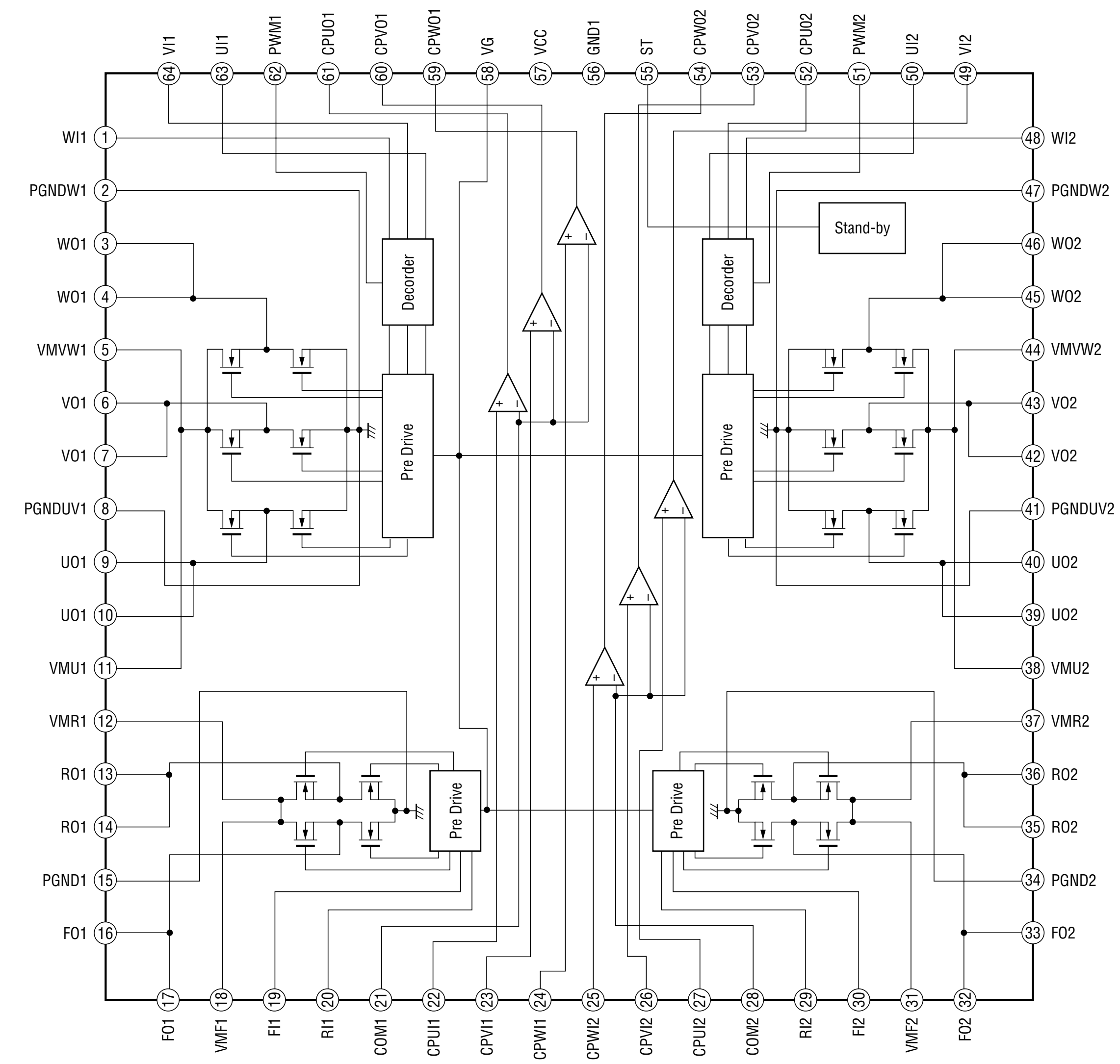


6-8. IC Block Diagrams

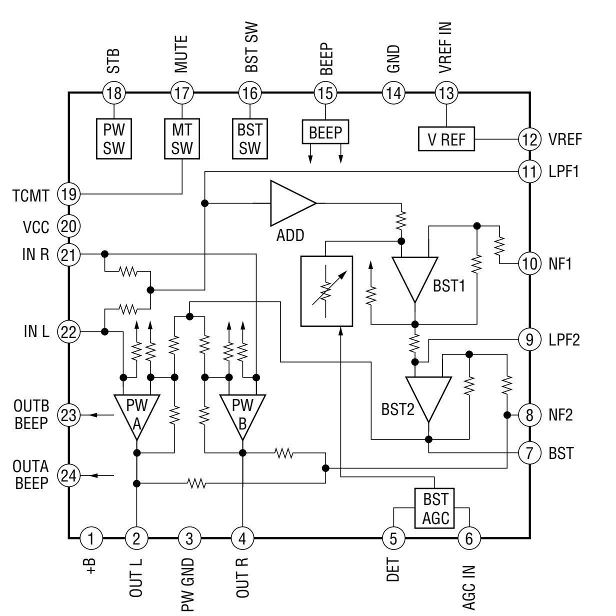
IC501 SN761058AZQLR



IC551 BD6642KN

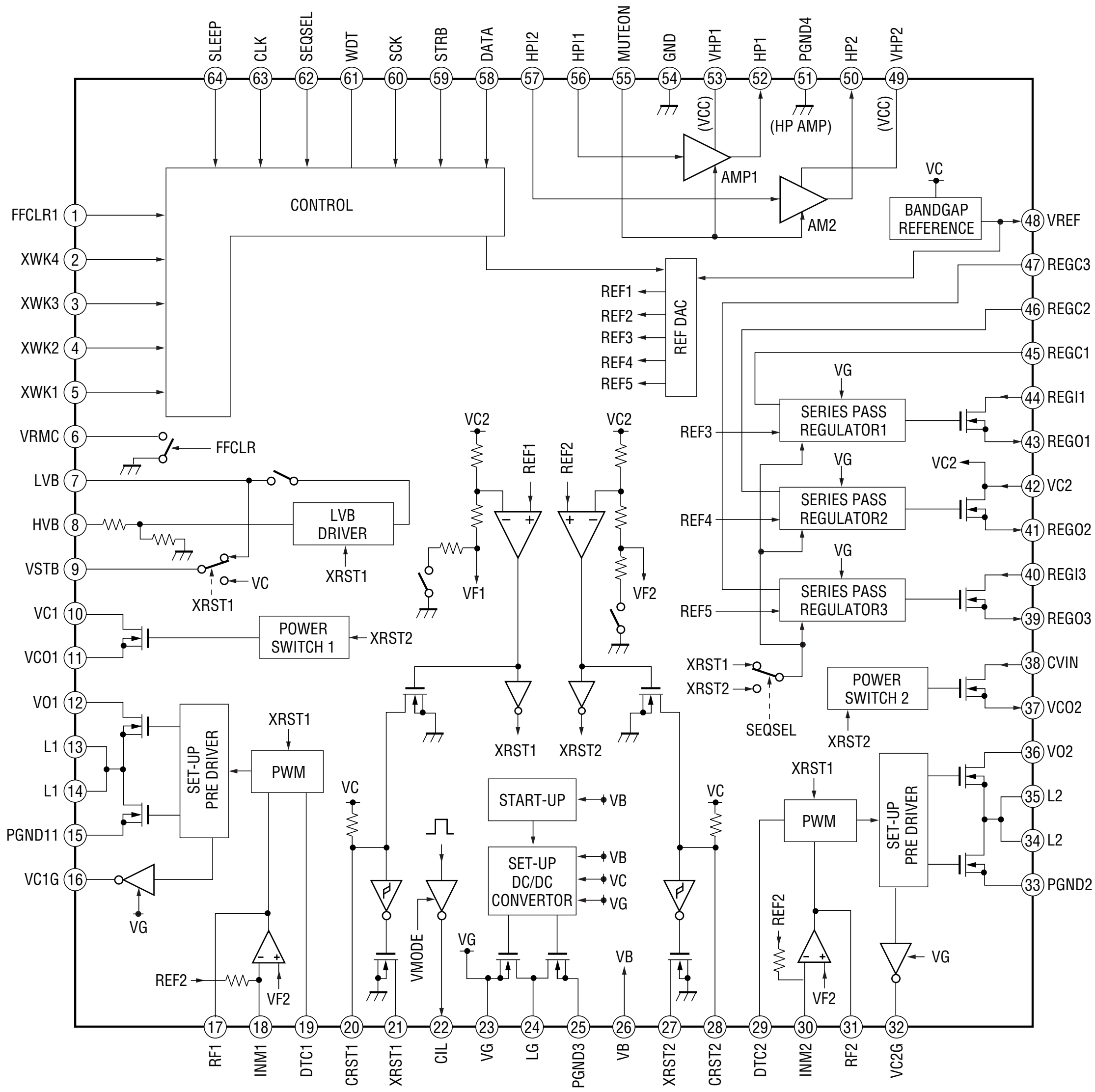


IC301 TA2131FL (EL)

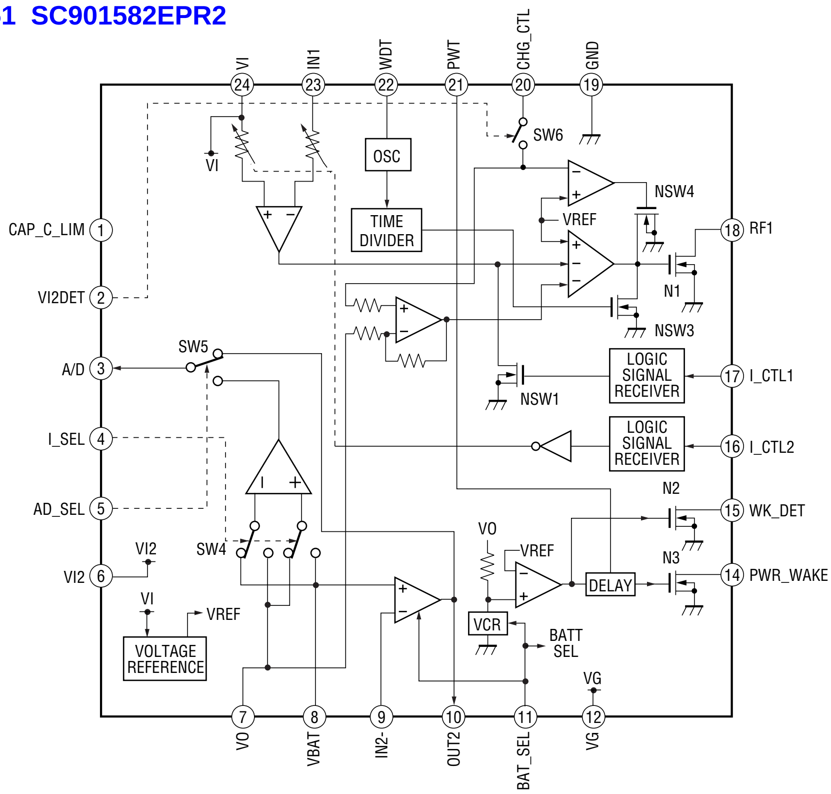


34

IC901 SC901580EPR2



IC951 SC901582EPR2



6-9. IC Pin Function Description

• IC601 CXD2679-201GA (SYSTEM CONTROLLER, DIGITAL SIGNAL PROCESSOR)

Pin No.	Pin Name	I/O	Description
1	OSCI	I	Resonator connection terminal for the system clock (22.5792MHz)
2	OSCO	O	Resonator connection terminal for the system clock (22.5792MHz)
3	VREFL	O	Reference voltage terminal connected to the capacitor (for the built-in D/A converter L-CH)
4	AOUTL	O	Built-in D/A converter L-CH signal output
5	AOUTR	O	Built-in D/A converter R-CH signal output
6	VREFR	O	Reference voltage terminal connected to the capacitor (for the built-in D/A converter R-CH)
7	ASYO	O	Playback EFM duplex signal output
8	ASYI	I	Playback EFM comparator slice level input
9	BIAS	I	Bias current input terminal for the playback EFM comparator
10	EFMIN	I	Playback EFM RF signal input from the RF amplifier
11	PCO	O	Phase comparison output terminal for the playback EFM system master PLL
12	FILI	I	Filter input terminal for the playback EFM system master PLL
13	FILO	O	Filter output terminal for the playback EFM system master PLL
14	CLTV	I	Internal VCO control voltage input terminal for the playback EFM system master PLL
15	PEAK	I	Peak hold signal input of the light amount signal (RF/ABCD) from the RF amplifier
16	BOTTOM	I	Bottom hold signal input of the light amount signal (RF/ABCD) from the RF amplifier
17	ABCD	I	Light amount signal (ABCD) input from the RF amplifier
18	FE	I	Focus error signal input from the RF amplifier
19	VC	I	Middle point voltage input from the RF amplifier
20	ADIO	O	Monitor output terminal of A/D converter input signal Not used (open)
21	ADRB	I	The lower limit voltage of A/D converter input terminal (connected to the ground)
22	SMON	I	Sled error signal input from the RF amplifier
23	TE	I	Tracking error signal input from the RF amplifier
24	AUX1	I	Auxiliary A/D input (fixed at "H" in this set)
25	ADRT	I	The upper limit voltage of A/D converter input terminal (fixed at "H" in this set)
26	DCHG	I	Connecting terminal with the analog power supply of low impedance (fixed at "H" in this set)
27	APC	I	Error signal input for the laser automatic power control (fixed at "H" in this set)
28	ADIPW0	I	ADIP duplex FM signal (22.05±1kHz) input from the RF amplifier
29	APCR	O	Reference PWM signal output for the laser automatic power control to the RF amplifier
30	TRI	O	Tracking servo drive PWM signal output (–) to the coil driver
31	TFI	O	Tracking servo drive PWM signal output (+) to the coil driver
32	FFI	O	Focus servo drive PWM signal output (+) to the coil driver
33	FRI	O	Focus servo drive PWM signal output (–) to the coil driver
34	FS4	O	176.4kHz clock signal output
35	SLD_PWM	O	Sled servo drive PWM signal output to the motor driver
36	CLV_CON_U	O	Spindle motor drive control signal output (U) to the motor driver
37	CLV_PWM	O	Spindle servo drive PWM signal output to the motor driver
38	CLV_CON_V	O	Spindle motor drive control signal output (V) to the motor driver
39	CLV_CON_W	O	Spindle motor drive control signal output (W) to the motor driver
40	CLV_MON_U	I	Spindle motor drive comparison signal input (U) from the motor driver
41	CLV_MON_V	I	Spindle motor drive comparison signal input (V) from the motor driver
42	CLV_MON_W	I	Spindle motor drive comparison signal input (W) from the motor driver
43	SLD_CON_V	O	Sled motor drive control signal output (V) to the motor driver
44	SLD_CON_W	O	Sled motor drive control signal output (W) to the motor driver
45	SLD_MON_U	I	Sled motor drive comparison signal input (U) from the motor driver
46	SLD_MON_V	I	Sled motor drive comparison signal input (V) from the motor driver
47	SLD_MON_W	I	Sled motor drive comparison signal input (W) from the motor driver
48	SLD_CON_U	O	Sled motor drive control signal output (U) to the motor driver
49	DADT/WTH	O	Audio data output terminal Not used (open)
50	LRCK	O	L/R sampling clock (44.1KHz) output to the external A/D converter Not used (open)

Pin No.	Pin Name	I/O	Description
51	XBCK	O	Bit clock (2.8224MHz) output to the external A/D converter Not used (open)
52	FS256	O	11.2896MHz clock output
53	FOCN	O	Filter cutoff control signal output Not used (open)
54 to 56	TSTDR1 to 3	O	Not used (open)
57	PL0/MNT0	O	DSP monitor output terminal 0 Not used (open)
58	PL1/MNT1	O	DSP monitor output terminal 1 Not used (open)
59	PL2/MNT2	O	DSP monitor output terminal 2 Not used (open)
60	PL3/MNT3	O	DSP monitor output terminal 3
61	PL4/SENS	O	DSP internal status (DSP SENS monitor) signal output terminal Not used (open)
62	DCLSOUTL	O	PWM modulator signal output for the D class headphone amplifier Not used (open)
63	DCLSOUTR	O	PWM modulator signal output for the D class headphone amplifier Not used (open)
64 to 66	NC	O	Not used (open)
67	PD0/XSCS0	I	Patch function detection terminal “L”: patch function (fixed at “L” in this set)
68	SI0	I	Serial data input from the nonvolatile memory
69	SO0	O	Serial data output to the nonvolatile memory and power control
70	SCK0	I/O	Serial clock output to the nonvolatile memory and power control
71	XHP_STBY	O	Power supply control signal output to the headphone amplifier
72	BEEP	O	Beep sound control signal output to the headphone amplifier
73	XRST_CHG	O	Reset signal output to the battery charge control IC
74	XSLP_MTR_OP	O	PD IC mode changeover signal output to the optical pick up
75	PD_S1	O	PD IC mode changeover signal output to the optical pick up
76	LINK_MON	O	Linking area monitor signal output Not used (open)
77	NC	O	Not used (open)
78	SET_CODE0	I	Input terminal for the set (fixed at “H” in this set)
79	SET_CODE1	I	Input terminal for the set (fixed at “L” in this set)
80	SET_CODE2	I	Input terminal for the set (fixed at “L” in this set)
81	SLD_CON_U	I	Sled servo monitor signal input
82	NC	O	Not used (open)
83	PWR_SLEEP	O	System sleep control signal output to the power control
84	PWR_FFCLR	O	Input latch output for the start switching to the power control
85	XCH_I_LIMIT	O	Charge current limit ON/OFF control signal output at the time of adaptor use
86	NC	O	Charge current limit value changeover control signal output at the time of adaptor use Not used (open)
87	LED_O_CTL	O	Orange LED ON/OFF control signal output
88	NC	O	Not used (open)
89	XTEST	I	Terminal for the test mode setting (normally open) “L”: test mode
90	XRF_RST	O	Reset control signal output to the RF amplifier “L”: reset
91	XCHG_WK_DET	I	External power supply (AC adaptor/charging stand) detection signal input
92	HOLD	I	HOLD switch input terminal “L”: hold ON
93	COUT_MON	I	Traverse count measurement monitor input
94	CHG_AD_SEL	O	A/D terminal of the battery charge control IC output selection signal output
95	CHG_AMP_SEL	O	Charge/discharge changeover control signal output for the current sense amplifier
96	XDC_IN	O	Not used (open)
97	CLV_CON_U	I	Spindle servo monitor signal input
98	PWR_STRB	O	Chip select signal output to the power control
99	HP_MUTE	O	Analog muting control signal output to the headphone amplifier “H”: muting ON
100	SP_MUTE	O	Muting control signal output to the speaker amplifier “L”: muting ON Not used (open)
101	SP-ON	I	External speaker changeover request signal input Not used (open)
102	SP_SOUND_ON	I	External speaker and sound on changeover request signal input Not used (open)
103	XRST_MTR_DRV	O	Reset control signal output to the motor driver “L”: reset
104	XCS_NV	O	Chip select signal output to the nonvolatile memory

Pin No.	Pin Name	I/O	Description
105	CHG_CTL	O	Output voltage control signal output to the battery charge control
106	LED_R_PWM	O	Red LED brightness control signal output
107	LED_G_PWM	O	Green LED brightness control signal output
108	SP_PWR_AC	O	Not used (open)
109	SP_PWR_BATT	O	Speaker amplifier power supply control signal output Not used (open)
110	PM0/XINT	O	Not used (open)
111	SBUS_DATA	I/O	SSB data input/output with the RF amplifier
112	SBUS_CLK	O	SSB clock output to the RF amplifier
113	XRADIO_ON	I	RADIO ON detection signal input
114	VB_MON	I	Voltage monitor input terminal (A/D input) of the UNREG power supply
115	CHG_MON	I	Decrement of voltage detection and charge/discharge current monitor input from the battery charge control
116	RF_VC	I	Reference voltage monitor input (A/D input) from the RF amplifier
117	SET_KEY_1	I	Key input (A/D input)
118	SET_KEY_2	I	Not used (fixed at “H”)
119	CRADLE_DET	I	Not used (fixed at “H”)
120	HIDC_MON	I	HIGH DC voltage monitor input (A/D input)
121	XWK1	I	Key on the set wake detection signal input
122	NC	I	Not used (fixed at “H”)
123	OPEN_CLS_SW	I	Open button detection switch input (A/D input) “L” : the open button is pressed
124	RMC_KEY1	I	Key input (A/D input) from the remote commander
125	RMC_DTCK	I/O	TSB master data clock input/output or SSB data input/output
126	TAT	I	Not used (open)
127	TAN	I	Not used (open)
128	NAR	I	Not used (open)
129	TRST	I	Not used (connected to the ground)
130	SAK	O	Not used (open)
131	XRESET	I	System reset signal input from the power control “L”: reset
132	ID0	I	Terminal for the test mode setting (normally fixed at “L”)
133, 134	TEST0, 1	I	Input terminal for the main test (normally fixed at “L”)
135 to 138	D0 to 3	I	DRAM data0 to 3 terminal Not used (open)
139 to 150	A00 to 11	—	DRAM address00 to 11 terminal Not used (open)
151	XCAS	—	DRAM CAS terminal Not used (open)
152	XRAS	—	DRAM RAS terminal Not used (open)
153	XWE	—	DRAM write enable terminal Not used (open)
154	XCS	—	DRAM chip select terminal Not used (open)
155	DVDD0	—	Power supply terminal
156	DVSS0	—	Ground terminal
157	DVDD1	—	Power supply terminal
158	DVSS1	—	Ground terminal
159	DVDD2	—	Power supply terminal
160	DVSS2	—	Ground terminal
161	DVDD3	—	Power supply terminal
162	DVSS3	—	Ground terminal
163	DVDD4	—	Power supply terminal
164	IFVDD0	—	Power supply terminal (for the microcomputer I/F block)
165	IFVSS0	—	Ground terminal (for the microcomputer I/F block)
166	IFVDD1	—	Power supply terminal (for the microcomputer I/F block)
167	IFVSS1	—	Ground terminal (for the microcomputer I/F block)
168	IFVDD2	—	Power supply terminal (for the microcomputer I/F block)
169	IFVSS2	—	Ground terminal (for the microcomputer I/F block)

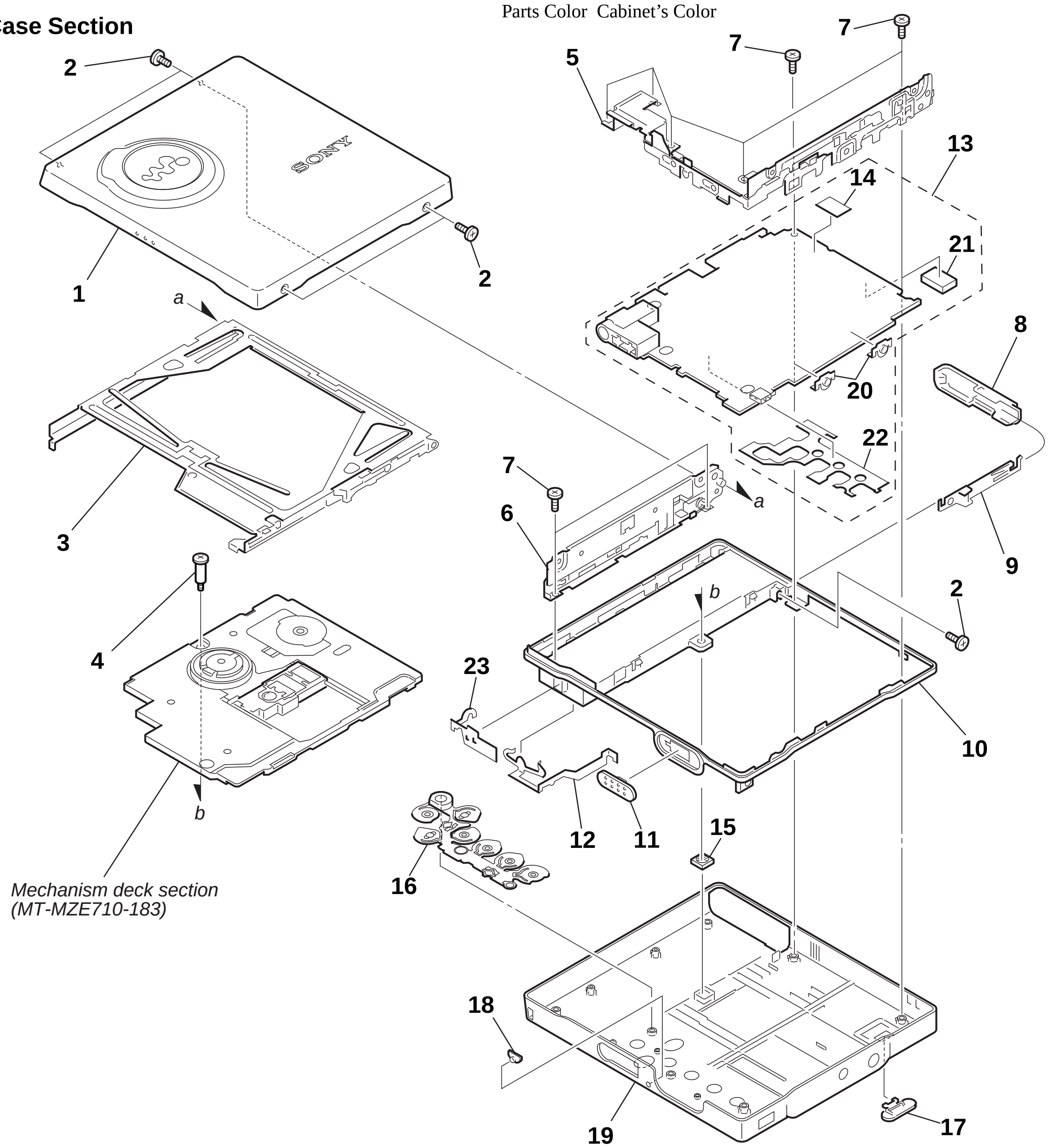
Pin No.	Pin Name	I/O	Description
170	IFVDD3	—	Power supply terminal (for the microcomputer I/F block)
171	IFVSS3	—	Ground terminal (for the microcomputer I/F block)
172	IFVDD4	—	Power supply terminal (for the microcomputer I/F block)
173	IFVSS4	—	Ground terminal (for the microcomputer I/F block)
174	AVDD	—	Power supply terminal (for the microcomputer analog)
175	AVSS	—	Ground terminal (for the microcomputer analog)
176	VDIOSC	—	Power supply terminal (for the OSC cell)
177	VSIOSC	—	Ground terminal (for the OSC cell)
178	DAVDD	—	Power supply terminal (for the built-in D/A converter)
179	DAVSS	—	Ground terminal (for the built-in D/A converter)
180	AVD1	—	Power supply terminal (for the DSP asymmetry system analog)
181	AVS1	—	Ground terminal (for the DSP asymmetry system analog)
182	AVD2	—	Power supply terminal (for the DSP servo system analog)
183	AVS2	—	Ground terminal (for the DSP servo system analog)
184	TSMVDD	—	Power supply terminal (for the TSB master communication)
185	DRAMVDD1	—	Power supply terminal (for DRAM)
186	DRAMVSS1	—	Ground terminal (for DRAM)
187	DRAMVDD2	—	Power supply terminal (for DRAM)
188	DRAMVSS2	—	Ground terminal (for DRAM)
189	ITO	—	Power supply terminal (for writing the flash memory)
190	MITY	—	Ground terminal (for writing the flash memory)
191	FLASH	I	Not used (connected to the ground)
192 to 195	MCUVDD0 to 3	—	Power supply terminal
196	MIFVDD3	—	Power supply terminal
197	MIFVSS3	—	Ground terminal
198 to 214	FA0 to 16	I	Not used (open)
215	TSFL	I	Not used (open)
216 to 231	DQ0 to 15	I	Not used (open)
232	NOE	I	Not used (open)
233	NWE	I	Not used (open)
234	NCE0	I	Not used (open)
235	TSOCKIN	I	Test terminal (fixed at “L”)
236 to 252	NC	—	Not used (open)

SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ Parts Color ↑ Cabinet's Color

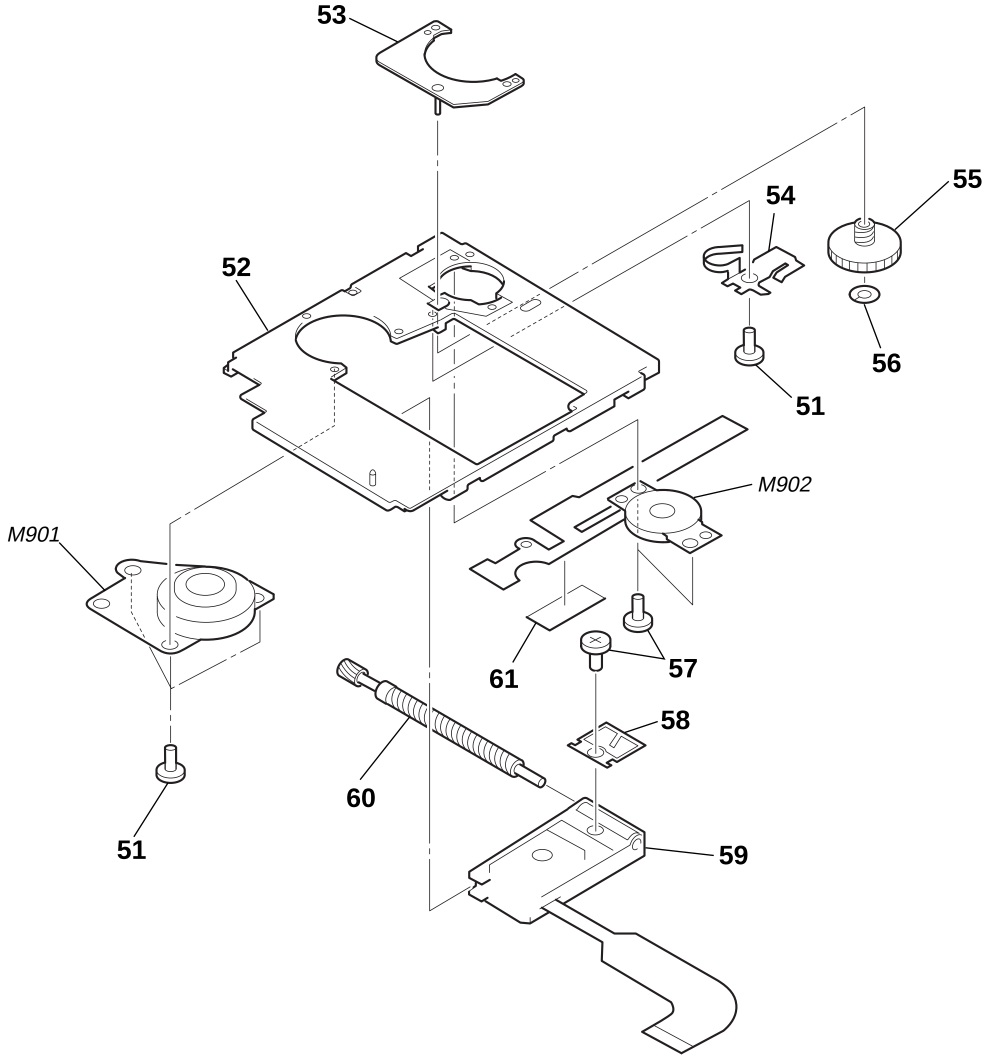
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

7-1. Case Section



Ref. No.	Part No.	Description	Remark
1	X-3382-976-1	PANEL (L) ASSY, UPPER (BLUE) (E)	
1	X-3383-277-1	PANEL (S) ASSY, UPPER (SILVER)	
2	3-225-873-09	SCREW (M1.4)	
3	X-3382-972-1	HOLDER ASSY	
4	3-246-203-21	SCREW (1.7), STEP	
5	X-3382-971-1	BRACKET (R) ASSY	
6	X-3382-970-1	BRACKET (L) ASSY	
7	4-984-017-11	SCREW (1.7), TAPPING	
8	3-250-235-01	LID, BATTERY CASE (SILVER)	
8	3-250-235-11	LID, BATTERY CASE (BLUE) (E)	
9	X-3382-618-1	TERMINAL (PLUS) ASSY, BATTERY	
10	3-250-241-01	STRIP, ORNAMENTAL (SILVER)	
10	3-250-241-21	BELT, ORNAMENTAL (BLUE) (E)	
11	3-250-242-01	KNOB (OPEN)	
12	3-235-223-01	TERMINAL BOARD (MINUS)	
* 13	A-3347-933-A	MAIN BOARD COMPLETE (E)	
* 13	A-3683-604-A	MAIN BOARD COMPLETE (AEP)	
14	3-253-691-01	SHEET (SLED)	
15	3-221-591-01	NUT (M1.4)	
16	3-250-239-01	BUTTON, CONTROL	
16	3-250-239-21	BUTTON, CONTROL (E)	
17	3-235-225-01	KNOB (WIRELESS) (SILVER)	
17	3-235-225-11	KNOB (WIRELESS) (BLUE) (E)	
18	3-250-240-01	WINDOW, LED	
19	3-250-238-31	CASE (REAR) (SILVER)	
19	3-250-238-41	CASE (REAR) (BLUE) (E)	
20	4-225-074-03	TERMINAL BOARD	
21	3-254-896-01	CUSHION (IC)	
22	3-253-229-01	SHEET, CONDUCTIVE	
23	3-253-176-01	PLATE, ELECTROSTATIC	

7-2. Mechanism Deck Section (MT-MZE710-183)



Ref. No.	Part No.	Description	Remark
51	3-248-370-01	SCREW, SELF TAP	
* 52	3-244-865-01	CHASSIS	
53	X-3382-399-1	BASE ASSY, MOTOR	
54	3-244-880-01	SPRING, THRUST RETAINER	
55	3-244-868-01	GEAR (SSA)	
56	3-338-645-31	WASHER (0.8-2.5)	
57	3-225-996-17	SCREW (M1.4)(EG),PRECISION PAN	
58	3-244-879-01	SPRING, RACK	
⚠59	X-3383-262-1	OPTICAL PICK-UP ASSY (ABX-1E)	
60	A-3174-607-A	SCREW BLOCK ASSY, LEAD	
61	3-250-856-01	SHEET (MD)	
M901	8-835-782-01	MOTOR, DC SSM18D (SPINDLE)	
M902	8-835-784-01	MOTOR, DC SSM22B (SLED)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- CAPACITORS:
  uF: μF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- COILS
  uH: μH
- Accessories are given in the last of this parts list.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
*	A-3347-933-A	MAIN BOARD, COMPLETE (E)			
		************************			
*	A-3683-604-A	MAIN BOARD, COMPLETE (AEP)			
		**************************			
	3-253-229-01	SHEET, CONDUCTIVE			
	3-253-691-01	SHEET (SLED)			
	3-254-896-01	CUSHION (IC)			
	4-225-074-03	TERMINAL BOARD			
		< CAPACITOR >			
C101	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C102	1-109-930-11	TANTAL. CHIP	220uF	20.00%	2.5V
C103	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C104	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C105	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C201	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C202	1-109-930-11	TANTAL. CHIP	220uF	20.00%	2.5V
C203	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C204	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C205	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C301	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C302	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C303	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C304	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C305	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C306	1-104-847-11	TANTAL. CHIP	22uF	20.00%	4V
C307	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C501	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C502	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C503	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C504	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C505	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C506	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C508	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C509	1-117-920-11	TANTAL. CHIP	10uF	20.00%	6.3V
C510	1-137-762-91	TANTALUM	10uF	20%	4V
C511	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C512	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C513	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C514	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C517	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C518	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C519	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C525	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C526	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C535	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C536	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C551	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C553	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C554	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C555	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C556	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C557	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C558	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C559	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C560	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C561	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C562	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C563	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C564	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C601	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C602	1-164-935-11	CERAMIC CHIP	470PF	10.00%	50V
C604	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C605	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C606	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V
C607	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C608	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C609	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C610	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C611	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C612	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C613	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C614	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C615	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C616	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C617	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C618	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C619	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C620	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C621	1-164-935-11	CERAMIC CHIP	470PF	10.00%	50V
C622	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C623	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C624	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C625	1-164-846-11	CERAMIC CHIP	6PF	0.50PF	50V
C626	1-164-846-11	CERAMIC CHIP	6PF	0.50PF	50V
C627	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C801	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C803	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C851	1-107-820-11	CERAMIC CHIP	0.1uF		16V

Ref. No.	Part No.	Description			Remark
C852	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C853	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C901	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C902	1-110-569-11	TANTAL. CHIP	47uF	20.00%	6.3V
C903	1-104-852-11	TANTAL. CHIP	22uF	20.00%	6.3V
C904	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C905	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C906	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C907	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C908	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C909	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C910	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C911	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C912	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C913	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C915	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C916	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C917	1-110-569-11	TANTAL. CHIP	47uF	20.00%	6.3V
C918	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C920	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C922	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C923	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C924	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C925	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C951	1-137-859-11	TANTAL. CHIP	220uF	20%	4V
C953	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C954	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C955	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C956	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C958	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C959	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C960	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C961	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C962	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C963	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C964	1-107-820-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN501	1-691-358-21	CONNECTOR, FFC/FPC (ZIF) 20P			
* CN551	1-817-288-21	CONNECTOR, FPC (ZIF)			
CN951	1-816-868-11	CONNECTOR (POWER JACK)			
		< DIODE >			
D101	8-719-056-58	DIODE	MAZS027008SO		
D201	8-719-056-58	DIODE	MAZS027008SO		
D301	8-719-056-58	DIODE	MAZS027008SO		
D801	6-500-541-01	DIODE	CL-270D-C-TSL		
D802	6-500-604-01	DIODE	CL-270HR-C-TSL		
D803	6-500-605-01	DIODE	CL-270YG-C-TSL		
D851	8-719-077-43	DIODE	MAZZ068H01S0		
D901	8-719-081-33	DIODE	MA2YD1500LS0		
D902	8-719-420-51	DIODE	MA729-TX		
D903	8-719-081-33	DIODE	MA2YD1500LS0		
D951	6-500-369-01	DIODE	FT1J3TP		

Ref. No.	Part No.	Description			Remark
		< FERRITE BEAD >			
FB601	1-414-228-11	FERRITE	0UH		
FB801	1-414-228-11	FERRITE	0UH		
FB802	1-414-228-11	FERRITE	0UH		
FB803	1-414-228-11	FERRITE	0UH		
		< IC >			
IC301	8-759-598-15	IC	TA2131FL(EL)		
@ IC501	6-703-946-01	IC	SN761058AZQLR		
IC551	6-703-290-01	IC	BD6642KN		
@ IC601	8-753-000-81	IC	CXD2679-201GA		
IC602	8-759-566-18	IC	AK6480BH-E2		
IC901	6-702-865-01	IC	SC901580EPR2		
IC951	6-702-867-01	IC	SC901582EPR2		
		< JACK >			
J301	1-817-447-11	JACK (🎧)			
		< COIL >			
L501	1-469-535-21	INDUCTOR	10uH		
L601	1-469-570-21	INDUCTOR	10uH		
L901	1-456-178-21	INDUCTOR	100uH		
L902	1-414-398-11	INDUCTOR	10uH		
L903	1-456-178-21	INDUCTOR	100uH		
L904	1-456-178-21	INDUCTOR	100uH		
L905	1-216-296-11	SHORT CHIP	0		
		< TRANSISTOR >			
Q301	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)		
Q501	8-729-922-10	TRANSISTOR	2SA1577-T106-QR		
Q801	8-729-427-49	TRANSISTOR	XP4214-TXE		
Q951	6-550-326-01	TRANSISTOR	FZT968TA		
		< RESISTOR >			
R101	1-218-969-11	RES-CHIP	22K	5%	1/16W
R102	1-218-969-11	RES-CHIP	22K	5%	1/16W
R103	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R104	1-208-635-11	RES-CHIP	10	5%	1/16W
R106	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R107	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R108	1-218-990-11	SHORT CHIP	0 (E)		
R108	1-220-878-11	METAL-CHIP	22	0.5%	(AEP)
R201	1-218-969-11	RES-CHIP	22K	5%	1/16W
R202	1-218-969-11	RES-CHIP	22K	5%	1/16W
R203	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R204	1-208-635-11	RES-CHIP	10	5%	1/16W
R206	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R207	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R208	1-218-990-11	SHORT CHIP	0 (E)		
R208	1-220-878-11	METAL-CHIP	22	0.5%	(AEP)
R301	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R302	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R303	1-218-981-11	RES-zCHIP	220K	5%	1/16W
R304	1-218-937-11	RES-CHIP	47	5%	1/16W

@ Replacement of IC501, IC601 used in this set requires a special tool.

MAIN

Ref. No.	Part No.	Description			Remark
R501	1-218-965-11	RES-CHIP	10K	5%	1/16W
R502	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R504	1-218-977-11	RES-CHIP	100K	5%	1/16W
R505	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R508	1-218-990-11	SHORT CHIP	0		
R515	1-242-967-81	RES-CHIP	1	5%	1/16W
R601	1-218-990-11	SHORT CHIP	0		
R602	1-218-990-11	SHORT CHIP	0		
R603	1-218-973-11	RES-CHIP	47K	5%	1/16W
R604	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R605	1-208-635-11	RES-CHIP	10	5%	1/16W
R606	1-208-635-11	RES-CHIP	10	5%	1/16W
R607	1-218-977-11	RES-CHIP	100K	5%	1/16W
R610	1-218-981-11	RES-CHIP	220K	5%	1/16W
R612	1-218-953-11	RES-CHIP	1K	5%	1/16W
R613	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R614	1-218-989-11	RES-CHIP	1M	5%	1/16W
R615	1-220-804-11	RES-CHIP	2.2M	5%	1/16W
R616	1-218-953-11	RES-CHIP	1K	5%	1/16W
R617	1-218-945-11	RES-CHIP	220	5%	1/16W
R618	1-218-977-11	RES-CHIP	100K	5%	1/16W
R619	1-218-965-11	RES-CHIP	10K	5%	1/16W
R620	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R622	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R623	1-218-965-11	RES-CHIP	10K	5%	1/16W
R625	1-218-990-11	SHORT CHIP	0		
R801	1-218-989-11	RES-CHIP	1M	5%	1/16W
R802	1-218-989-11	RES-CHIP	1M	5%	1/16W
R803	1-218-941-81	RES-CHIP	100	5%	1/16W
R805	1-218-990-11	SHORT CHIP	0		
R808	1-218-989-11	RES-CHIP	1M	5%	1/16W
R809	1-218-990-11	SHORT CHIP	0		
R811	1-218-945-11	RES-CHIP	220	5%	1/16W
R812	1-218-953-11	RES-CHIP	1K	5%	1/16W
R813	1-218-949-11	RES-CHIP	470	5%	1/16W
R814	1-218-953-11	RES-CHIP	1K	5%	1/16W
R815	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R816	1-218-969-11	RES-CHIP	22K	5%	1/16W
R817	1-208-635-11	RES-CHIP	10	5%	1/16W
R819	1-218-945-11	RES-CHIP	220	5%	1/16W
R820	1-244-161-81	RES-CHIP	2.2	5%	1/16W
R821	1-218-949-11	RES-CHIP	470	5%	1/16W
R822	1-218-953-11	RES-CHIP	1K	5%	1/16W
R823	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R824	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R826	1-218-990-11	SHORT CHIP	0		
R901	1-218-985-11	RES-CHIP	470K	5%	1/16W
R902	1-218-981-11	RES-CHIP	220K	5%	1/16W
R903	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R904	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R905	1-218-989-11	RES-CHIP	1M	5%	1/16W
R907	1-218-969-11	RES-CHIP	22K	5%	1/16W
R908	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R909	1-218-989-11	RES-CHIP	1M	5%	1/16W
R910	1-218-977-11	RES-CHIP	100K	5%	1/16W
R911	1-218-965-11	RES-CHIP	10K	5%	1/16W
R913	1-218-985-11	RES-CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R951	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R952	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R953	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R954	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R956	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R957	1-218-941-81	RES-CHIP	100	5%	1/16W
R958	1-218-965-11	RES-CHIP	10K	5%	1/16W
R959	1-245-456-21	METAL	1	1%	1/5W
R960	1-245-454-21	METAL	0.022	1%	1/5W
R961	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R962	1-218-977-11	RES-CHIP	100K	5%	1/16W
R963	1-218-965-11	RES-CHIP	10K	5%	1/16W
R964	1-208-855-81	METAL CHIP	47	0.5%	1/16W
R965	1-240-234-11	METAL CHIP	10	1%	1/4W
R967	1-245-455-21	METAL	0.47	1%	1/5W
R969	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R970	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB551	1-233-963-21	RES, NETWORK (CHIP TYPE) 2.2K			
RB552	1-233-967-11	RES, NETWORK (CHIP TYPE) 10K			
		< SWITCH >			
S801	1-786-033-21	SWITCH, TACTILE (■)			
S802	1-786-033-21	SWITCH, TACTILE (▶▶I)			
S803	1-786-033-21	SWITCH, TACTILE (▶II)			
S804	1-786-033-21	SWITCH, TACTILE (I◀◀)			
S805	1-786-033-21	SWITCH, TACTILE (+)			
S806	1-786-033-21	SWITCH, TACTILE (-)			
S807	1-786-033-21	SWITCH, TACTILE (GROUP)			
S808	1-786-101-22	SWITCH, DETECTION			
S809	1-572-922-11	SWITCH, SLIDE (HOLD ➡)			
		< VIBRATOR >			
X601	1-795-830-21	VIBRATOR, CRYSTAL 22.5792 MHz			

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MISCELLANEOUS
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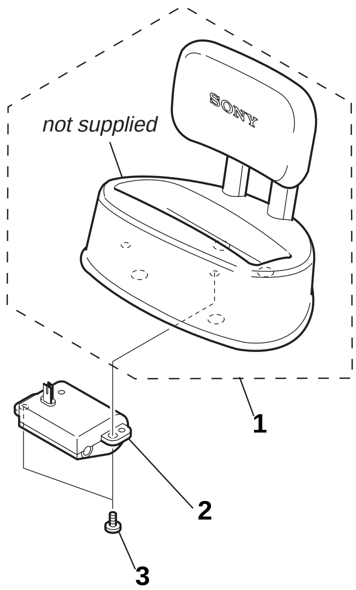
Ref. No.	Part No.	Description
⚠59	X-3383-262-1	OPTICAL PICK-UP ASSY (ABX-1E)
M901	8-835-782-01	MOTOR, DC SSM18D (SPINDLE)
M902	8-835-784-01	MOTOR, DC SSM22B (SLED)

ACCESSORIES
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Ref. No.	Part No.	Description
1	X-3383-432-1	ATTACHMENT (V) ASSY (SILVER)
1	X-3383-434-1	ATTACHMENT (B) ASSY (BLUE) (E)
2	1-477-507-11	CHARGE UNIT
3	3-318-203-01	SCREW (B 1.7X6), TAPPING
	1-251-895-11	BATTERY CASE
	1-477-507-11	CHARGE UNIT
⚠	1-477-565-31	ADAPTOR, AC (AC-ES305K) (AEP)
⚠	1-477-566-31	ADAPTOR, AC (AC-ES305K) (E)
	1-477-691-11	CONTROL UNIT, REMOTE
	1-756-306-21	BATTERY, NICKEL HYDRIGEN

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
	3-008-521-21	CASE, BATTERY CHARGE	
	3-021-018-11	LABEL, FRANCE (AEP)	
	3-220-749-01	CASE, CARRYING	
	3-250-259-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-250-259-21	MANUAL, INSTRUCTION (FRANCH) (AEP)	
	3-250-259-31	MANUAL, INSTRUCTION (GERMAN) (AEP)	
	3-250-259-41	MANUAL, INSTRUCTION (SPANISH) (AEP)	
	3-250-259-51	MANUAL, INSTRUCTION (DUTCH) (AEP)	
	3-250-259-61	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (E)	
	8-954-008-90	RECEIVER, EAR MDR-E808SP/C SET	



REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2003.02	New